



123080

**MALCOLM
PIRNIE**

Final Site Safety and Health Plan

**Cornell-Dubilier Electronics Superfund Site,
Operable Unit-1: Vicinity Property Pre-Design Sampling
South Plainfield, NJ**

For: U.S. Army Corps of Engineers

**USACE Contract No. W912DQ-06-D-0006
Task Order No. 0018**

March 2008

Prepared by:
Malcolm Pirnie, Inc.
104 Corporate Park Drive
White Plains, New York 10602



U.S. Army Corps of
Engineers
Kansas City District

**CORNELL-DUBILIER ELECTRONICS SUPERFUND SITE
SITE SAFETY AND HEALTH PLAN
FOR OPERABLE UNIT 1 (OU-1)**

**U.S. ARMY CORPS OF ENGINEERS
CONTRACT NO. W912DQ-06-D-0006**

CONTRACTOR QC SIGN-OFF

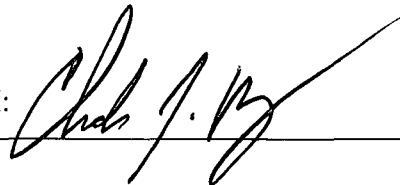
Malcolm Pirnie, Inc. has reviewed this document.

Edward Dudek, PE, Project Manager:



Date: 9/30/08

Charles Myers, CHMM, CIH, CIPS, CPEA, Project CIH:



Date: 4/30/2008

CORNELL-DUBILIER ELECTRONICS SUPERFUND SITE
FINAL SITE SAFETY AND HEALTH PLAN
FOR OPERABLE UNIT 1 (OU-1)
TABLE OF CONTENTS

1.0	INTRODUCTION	1-1
1.1	SCOPE	1-1
1.2	REGULATORY REQUIREMENTS AND GUIDELINES	1-2
1.3	CORPORATE HEALTH AND SAFETY POLICY	1-2
1.4	CONTRACTOR/PROJECT BACKGROUND INFORMATION	1-2
2.0	SITE BACKGROUND AND SETTING.....	2-1
2.1	SITE LOCATION AND HISTORY	2-1
2.2	PROPOSED FIELD ACTIVITIES.....	2-1
3.0	PROJECT ORGANIZATION AND RESPONSIBILITY	3-1
3.1	PROJECT ORGANIZATION OF SAFETY PERSONNEL	3-1
3.2	RESPONSIBILITIES OF PROJECT/SAFETY PERSONNEL	3-1
3.2.1	<i>Health and Safety Field Inspections and Audits.....</i>	<i>3-4</i>
4.0	POTENTIAL HEALTH AND SAFETY HAZARDS AND CONTROLS	4-1
4.1	ENVIRONMENTAL SAMPLING ACTIVITIES	4-1
4.2	CHEMICAL HAZARDS	4-5
4.3	PHYSICAL HAZARDS.....	4-6
4.3.1	<i>Heat Stress.....</i>	<i>4-6</i>
4.3.2	<i>Cold Stress.....</i>	<i>4-6</i>
4.3.3	<i>Noise Hazards</i>	<i>4-6</i>
4.3.4	<i>Slip, Trip, and Fall Hazards.....</i>	<i>4-6</i>
4.3.5	<i>Sanitation</i>	<i>4-7</i>
4.3.6	<i>Lifting Safety</i>	<i>4-7</i>
4.3.7	<i>Ladder Safety.....</i>	<i>4-8</i>
4.3.8	<i>Overhead Hazards.....</i>	<i>4-8</i>
4.4	BIOLOGICAL HAZARDS	4-8
5.0	PERSONAL PROTECTIVE EQUIPMENT.....	5-1
5.1	GENERAL PROTECTION LEVELS.....	5-1
5.2	INSPECTION AND USE OF PPE	5-3

5.2.1	<i>Inspection of PPE</i>	5-3
5.2.2	<i>PPE Donning Procedures</i>	5-3
5.2.3	<i>PPE Doffing Procedures</i>	5-3
6.0	HEALTH AND SAFETY ORIENTATION TRAINING	6-1
6.1	INTRODUCTION	6-1
6.2	SPECIALIZED TRAINING	6-1
6.2.1	<i>Pre-Investigation Health and Safety Briefing</i>	6-2
6.2.2	<i>Tailgate Safety Meetings</i>	6-3
6.3	HAZARD COMMUNICATION.....	6-3
7.0	MEDICAL SURVEILLANCE AND EXPOSURE MONITORING	7-1
7.1	MEDICAL SURVEILLANCE.....	7-1
7.2	HEAT STRESS MONITORING.....	7-1
7.3	COLD STRESS MONITORING	7-5
7.4	NOISE EXPOSURE MONITORING	7-10
8.0	HAZARDOUS MATERIAL MONITORING	8-1
9.0	SITE CONTROL MEASURES	9-1
10.0	USACE ACCIDENT REPORTING AND RECORDKEEPING	10-1
10.1	EXPOSURE DATA COLLECTION	10-1
10.2	ACCIDENT INVESTIGATIONS AND REPORTS.....	10-1
10.3	IMMEDIATE NOTIFICATION OF MAJOR ACCIDENTS	10-1
11.0	DECONTAMINATION PROCEDURES	11-1
11.1	INTRODUCTION	11-1
11.2	PERSONNEL DECONTAMINATION.....	11-1
11.3	EQUIPMENT DECONTAMINATION.....	11-1
11.4	PPE DECONTAMINATION.....	11-1
11.5	DECONTAMINATION FOR MEDICAL EMERGENCIES	11-2
11.6	WASTE DISPOSAL PROCEDURES	11-2
12.0	STANDARD OPERATING PROCEDURES FOR SAFETY	12-1
12.1	GENERAL REQUIREMENTS.....	12-1
13.0	EMERGENCY RESPONSE PLAN	13-1
13.1	GENERAL.....	13-1

13.2	EMERGENCY EQUIPMENT	13-1
13.3	EMERGENCY RESPONSE	13-2
13.3.1	<i>Emergency Contacts</i>	13-3
13.3.2	<i>Medical Emergency</i>	13-4
13.3.3	<i>First Aid</i>	13-5
13.3.4	<i>Emergency Care Steps</i>	13-5
13.3.5	<i>Inhalation</i>	13-6
13.3.6	<i>Ingestion</i>	13-6
13.3.7	<i>Skin Contact</i>	13-6
13.3.8	<i>Eye Contact</i>	13-6
13.3.9	<i>Fire/Explosion Response</i>	13-7
13.3.10	<i>Spill Prevention/Response</i>	13-7
13.3.11	<i>Spill Response Procedures</i>	13-7
13.3.12	<i>Spill Reporting Requirements</i>	13-8
13.3.13	<i>Emergency Information</i>	13-8
13.3.14	<i>Spill Containment</i>	13-8
13.4	HOSPITAL LOCATIONS AND DIRECTIONS	13-9
13.4.1	<i>Personnel Roles, Lines of Authority, Communication</i>	13-9
13.4.2	<i>Telephones/Radios</i>	13-9
13.4.3	<i>Hand Signals</i>	13-9
13.5	REPORTING ACCIDENTS, INJURIES, ILLNESSES, AND NEAR-MISS	
INCIDENTS	13-10	
13.6	EVACUATION PROCEDURES AND SAFE DISTANCES	13-11
13.6.1	<i>Site Evacuation</i>	13-11
13.7	SITE SECURITY AND CONTROL	13-11
13.8	EMERGENCY RESPONSE EVALUATION	13-11

FIGURES

Figure 1	Site Location Map
Figure 2	Malcolm Pirnie Organization Chart

TABLES

Table 3-1: Malcolm Pirnie Project/Safety Personnel.....	3-4
Table 4-1: Task Hazard Analysis.....	4-1
Table 4-2: PELs, TLVs and IDLHs	4-5
Table 5-1: Required Level of Protection	5-1
Table 7-1: Wind Chill Temperature Chart.....	7-6
Table 13-1: Emergency Contacts.....	13-4
Table 13-2: Hospitals in Vicinity of Cornell-Dubilier Site	13-9
Table 13-3: Hand Signals and Meanings	13-9

APPENDICES

- Appendix A: Malcolm Pirnie, Inc. Corporate Health and Safety Policy and Accident Prevention Plan
- Appendix B: Malcolm Pirnie, Inc. Safety Statistics (2000-2006);
- Appendix C: Health and Safety Checklists
- Appendix D: Documentation of Site-Specific Training
- Appendix E: Tailgate Safety Meeting Checklist
- Appendix F: Malcolm Pirnie, Inc. Corporate Hearing Conservation Program
- Appendix G: Material Safety Data Sheets for Decontamination Chemicals
- Appendix H: Incident/Near Miss Investigation Report
- Appendix I: Hospital Directions

ABBREVIATIONS AND ACRONYMS

ACGIH	American Conference of Governmental Industrial Hygienists
ANSI	American National Standards Institute
CDE	Cornell-Dubilier Electronics
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
COC	Chain of Custody
DESA	Division of Environmental Science and Assessment
DPM	Deputy Project Manager
FID	Flame Ionization Detector
FSP	Field Sampling Plan
FTL	Field Team Leader
GIS	Geographic Information System
GPS	Global Positioning System
HSFAR	Health and Safety Field Audit Report
IATA	International Air Transport Association
IDLH	Immediately Dangerous to Life and Health
IDW	Investigative Derived Waste
mg/kg	Milligrams Per Kilogram
MSDS	Material Safety Data Sheet
NIOSH	National Institute for Occupational Safety and Health
NJDEP	New Jersey Department of Environmental Protection
NRC	National Response Center
NRR	Noise Reduction Rating
OSHA	Occupational Safety and Health Administration
OU-1	Operable Unit 1
OU-2	Operable Unit 2
PCB	Polychlorinated Biphenyl
PCIH	Project Certified Industrial Hygienist

ABBREVIATIONS AND ACRONYMS

PEL	Permissible Exposure Limit
PM	Project Manager
PO	Project Officer
PPE	Personal Protective Equipment
ppm	Parts per Million
PSO	Project Safety Officer
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RI	Remedial Investigation
ROD	Record of Decision
SLM	Sound Level Meter
SMO	Sample Management Officer
SOP	Standard Operating Procedure
SOW	Statement of Work
SSHP	Site Safety and Health Plan
STS	Standard Threshold Shift
TLV	Threshold Limit Value
USACE	United States Army Corps of Engineers
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
ug/m3	Micrograms Per Cubic Meter

1.0 INTRODUCTION

1.1 SCOPE

Malcolm Pirnie, Inc. (Malcolm Pirnie) is under contract to the United States Army Corps of Engineers (USACE), Kansas City District, to create planning documents for investigation and design for Operable Unit-1 (OU-1). Operable Unit 1 consists of the residential, commercial, and municipal properties in the vicinity of the Cornell-Dubilier Electronics (CDE) Superfund Site (the Site) in South Plainfield, New Jersey.

Studies conducted to date suggest that the OU-1 properties may be contaminated with polychlorinated biphenyls (PCBs). This Site Safety and Health Plan (SSHP) has been developed to address health and safety requirements for Malcolm Pirnie employees and subcontractors conducting remedial investigations in compliance with Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120 and 29 CFR 1926.65.

The SSHP has been developed in conjunction with Malcolm Pirnie's Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP), which outline the investigation and sampling of soils and indoor dust at properties adjacent to the Site. The SSHP describes the requirements and procedures for Malcolm Pirnie employee protection for the various investigation activities at the OU-1 properties.

This SSHP outlines safety, health, and emergency response procedures for preventing accidents and protecting personnel from injury and occupational illness during investigation activities. Included in this SSHP are the assignment of responsibilities, personnel protection minimum requirements, safe work practices, and emergency response procedures. This document is based upon available historical information and includes an assessment of potential physical/chemical hazards associated with each activity related to the pre-remedial action investigation. A copy of the SSHP will be available during the OU-1 property investigations, in the keeping of the Project Safety Officer (PSO). Project personnel and visitors are to comply with this SSHP while on OU-1 properties.

1.2 REGULATORY REQUIREMENTS AND GUIDELINES

The procedures outlined in this SSHP comply with the applicable OSHA requirements contained in 29 CFR 1910 including the final rule contained in 29 CFR 1910.120. The procedures are also consistent with the guidance contained in the following documents:

- Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities [prepared jointly by the USEPA, National Institute for Occupational Safety and Health (NIOSH), OSHA, and the US Coast Guard], October 1985;
- USACE's Safety and Health Requirements Manual, EM 385-1-1, November 2003 and amendments; and
- USACE's Safety and Occupational Health Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW) Activities, ER-385-1-92, May 2007.

1.3 CORPORATE HEALTH AND SAFETY POLICY

A copy of the Malcolm Pirnie, Inc. Corporate Health and Safety Policy and Accident Prevention Plan is included in Appendix A.

1.4 CONTRACTOR/PROJECT BACKGROUND INFORMATION

As stated above, Malcolm Pirnie is under contract to the USACE, Kansas City District to create planning documents for pre-remedial action investigations for OU-1 vicinity properties at the Cornell-Dubilier Site in South Plainfield, New Jersey. Background information regarding the project and work to be performed is discussed in Section 2.0.

Safety statistics for Malcolm Pirnie from 2002-2006 are included in Appendix B; these statistics include the firm's experience modification rate (EMR), number of recordable incidents, number of lost workdays, and related statistics. OSHA Form 300a – Log of Work-Related Injuries and Illnesses – is also included in Appendix B for calendar years 2000-2006.

2.0 SITE BACKGROUND AND SETTING

2.1 SITE LOCATION AND HISTORY

The Cornell-Dubilier Electronics (CDE) Superfund Site (the Site) is located at 333 Hamilton Boulevard in South Plainfield, Middlesex County, New Jersey. The Site consists of approximately 26 acres including the Hamilton Industrial Park, contaminated portions of the Bound Brook adjacent to and downstream of the industrial park, and contaminated residential, municipal, and commercial properties in the vicinity of the former Cornell-Dubilier Electronics Corporation, Inc. facility. The CDE operated from 1936 to 1962, manufacturing electronic components including, in particular, capacitors. Polychlorinated biphenyls (PCBs) and chlorinated organic solvents were used in the manufacturing process.

These activities led to widespread chemical contamination at the facility, as well as migration of contaminants to nearby areas. PCBs have been detected in ground water, soils and in building interiors at the industrial park, at adjacent residential, commercial, and municipal properties, and in surface water and sediments of the Bound Brook. The USEPA divided the Site into separate operable units for remediation design. The focus of this project is OU-1, which consists of residential, commercial, and municipal properties located in the vicinity of the former CDE facility with soils and/or indoor dust potentially contaminated with PCBs.

2.2 PROPOSED FIELD ACTIVITIES

The field investigation activities proposed at the OU-1 vicinity properties are described in the FSP. Components of the pre-remedial action field investigation may include, but are not limited to, the following elements:

- Surface and sub-surface soil sampling; and
- Indoor dust sampling

Detailed descriptions of the fieldwork and sampling activities and the Standard Operating Procedures (SOPs) that are applicable to each field activity are provided in the FSP and the QAPP.

3.0 PROJECT ORGANIZATION AND RESPONSIBILITY

3.1 PROJECT ORGANIZATION OF SAFETY PERSONNEL

An organizational chart identifying the project health and safety personnel is shown in Figure 2.

3.2 RESPONSIBILITIES OF PROJECT/SAFETY PERSONNEL

Project Officer – The Project Officer (PO) has the final responsibility for the quality of work performed under the contract. The Project Officer is responsible for the commitment of resources required to fulfill Malcolm Pirnie's obligation to the USACE.

Project Manager – The Project Manager (PM) is accountable to the Project Officer throughout the duration of the project. The PM will be the primary point of contact with the USACE. The PM may delegate authority to expedite and facilitate the implementation of the project plan. The PM is responsible for:

- Coordination with the USACE;
- Budget control;
- Subcontractor performance;
- Project coordination to implement Work Plans;
- Allocation of staffing and resources to implement the QA/QC program and the Site Safety and Health Plan (SSHP); and
- Review of engineering and interim reports.

Deputy Project Manager – The Deputy Project Manager (DPM) reports directly to, and works with, the Project Manager. The DPM is responsible for assisting the PM, as needed, with project related issues.

Project Quality Consultants – The Project Quality Consultants (QCs) are responsible for independent reviews of project quality. The QCs are integral to the project success by performing technical reviews throughout all project phases and offering technical guidance.

Project Certified Industrial Hygienist (PCIH) – is responsible for development and implementation of this Site Safety and Health Plan (SSHP). The PCIH functions as a liaison with the USACE, OSHA, and other agencies on project health and safety issues.

The PCIH is responsible for reviewing documentation:

- That properly trained field personnel are assigned to this project;
- That medically cleared field personnel are assigned to this project;
- That field personnel have adequate training and experience with personal protective equipment;

The PCIH also provides guidance on data interpretation and assists in the determination of the proper level of worker protection.

Project Quality Control Manager – The Project Quality Control (QC) Manager is responsible for project specific supervision, monitoring of the QA program, and maintaining the QAPP. Additional responsibilities include:

- Ensuring that field personnel are familiar with and adhere to proper sampling procedures, field measurement techniques, sample identification and chain-of-custody procedures;
- Coordinating with the analytical laboratory for the receipt of samples, the reporting of analytical results and recommending corrective actions to correct deficiencies in the analytical protocol or sampling; and
- Preparing QA reports to management.

Project Safety Officer – The Project Safety Officer (PSO) is knowledgeable in safety and worker protection techniques as they relate to the project. Responsibilities include monitoring daily compliance of site work to the SSHP, having the ability and authority to recommend changes or additions to the SSHP, and providing technical assistance to the PM on problems relating to work site safety. The PSO is also responsible for ensuring that all of the necessary health and safety equipment and supplies are obtained and present on the site. Checklists to aid in this process are included in Appendix C.

The PSO is responsible for the field implementation of the SSHP including emergency procedures and personnel decontamination procedures. If unsafe work conditions are encountered, the PSO is authorized, in consultation with the PM, the Field Team Leader and PCIH, to stop work. Resolution of all on-site health and safety problems will be coordinated through the FTL with assistance from the PCIH and/or the Health and Safety QA/QC Officer. The PSO will complete a daily log of SSHP implementation activities.

Field Team Leader (FTL) – The Field Team Leader will serve as the on-Site contact person for Malcolm Pirnie for field investigations and activities. The coordinator will be responsible for the logistics of the field activities. The FTL will:

- Inspect and replace equipment;
- Prepare interim field reports;
- Prepare samples for shipment;
- Coordinate field activities; and
- Schedule sampling and other field activities.

Sample Management Officer – The Sample Management Officer (SMO) will be responsible for oversight of the sample labeling, packaging, and handling, and for ensuring that all are conducted in accordance with applicable International Air Transport Association (IATA) and United States Department of Transportation (USDOT) regulations. The SMO will ensure that Chain of Custody (COC) procedures document pertinent sampling data and all transfers of custody until the samples reach the analytical laboratory.

Malcolm Pirnie Field Personnel – All field personnel are required to become thoroughly familiar with the Work Plans for OU-1. Field personnel must follow the procedures and guidelines outlined in the FSP, QAPP, and the SSHP and will work under the guidance of the FTL. Field personnel will use protective equipment properly to protect themselves and their fellow workers from injury and to prevent damage to material, equipment, and facilities. Field personnel will contribute any appropriate suggestions and assist in discovering non-conformances or correcting unsafe working conditions.

Malcolm Pirnie personnel who have health and safety responsibility for this project are summarized in Table 3-1:

Table 3-1: Malcolm Pirnie Project/Safety Personnel

Project Role	Name	Contact Information
Project Manager	Edward Dudek, PE	W: (914) 641-2686
Deputy Project Manager	Erika Zamek	W: (914) 641-2961
Project Certified Industrial Hygienist	Charles Meyers, CHMM, CIH, CIPS, CPEA	W: (914) 641-2610 Cell: (914) 484-7151
Project Safety Officer	Doug Auld	W: (201) 398-4351
Alternate Project Safety Officer	TBD	W: (201) 398-XXXX
Field Team Leader	Doug Auld	W: (201) 398-4351
Alternate Field Team Leader	TBD	W: (201) 398-XXXX
Alternate Field Team Leader	TBD	W: (201) 398-XXXX

3.2.1 Health and Safety Field Inspections and Audits

The PSO will make daily evaluations of the work areas and document the implementation of the SSHP in the daily log. Weekly summaries will be sent to the PM and the FTL. Significant issues will be resolved between the PM, the FTL, and the PSO as required.

The PCIH or designee will visit the site and observe field investigation activities and the implementation of the SSHP and prepare a Health and Safety Field Audit Report (HSFAR) addressing field operations safety and health matters. The audit will evaluate current field activities against the requirements of the SSHP and include the activities of Malcolm Pirnie field staff and the activities of employees of subcontractors (if any) who happen to be working on the day of the audit. Any deficiencies that are noted during the audit that can be immediately corrected will be corrected in the field as they occur. The HSFAR will document deficiencies observed during the audit and will recommend corrective actions that to address deficiencies observed.

The PM will assist with corrective action and maintain an on-going log of the audit finding correction activities in the monthly progress report. The Malcolm Pirnie PM will submit

follow-up reports to the USACE PM, describing completed corrective actions that addressed major deficiencies. A minimum of one Health and Safety audit per year will be conducted by the PCIH or designee during the investigations.

4.0 POTENTIAL HEALTH AND SAFETY HAZARDS AND CONTROLS

4.1 ENVIRONMENTAL SAMPLING ACTIVITIES

The field sampling at the Site will aid in identifying the extent of PCB contamination at the OU-1 properties. Detailed descriptions of sampling activities are outlined in Attachments 1, 2 and 3 to the FSP. The SSHP includes the Task Hazard Analysis (Table 4-1) for the following:

- Surface and sub-surface soil sampling
- Indoor dust sampling

General physical and biological hazards and monitoring/control methods are also addressed in this section. Additional field activities assigned after the publication of this SSHP, if any, will be addressed in addenda.

Table 4-1: Task Hazard Analysis

Task	Inhalation Hazard	Ingestion/Dermal Contact Hazard	Slips and Falls	Lifting Hazard	Electric (Vacuum) tools	Chemical Spills	Foot/vehicular traffic	Heat Stress	Cold Stress	Noise
Surface and sub-surface soil sampling	X	X	X	X		X	X	X	X	
Indoor dust sampling	X	X	X	X	X	X				X

Table 4-1: Task Hazard Analysis (continued)

PRINCIPAL TASK/STEP	SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Surface and sub-surface soil sampling	Inhalation Hazards (fine soils) Minimal Potential Exposures	Use of PPE is required in accordance with SOPs 2 and 4. Dust masks are optional. Decontamination of equipment and waste disposal are discussed in SOP 4. Adherence to safety standard operating procedures is discussed in Section 12.0.
	Ingestion/Dermal Contact	Use of PPE, including gloves, is required. Wash hands and face prior to eating or drinking.
	Slips and Falls	Leather safety boots with steel-toes and non-skid soles to protect against sharp or heavy objects and slippery ground and floors. Practice good work area housekeeping (e.g., keep walkways clear of equipment).
	Lifting Hazards	Use proper lifting techniques (e.g., bend legs, not back). Use an individual limit of 40 pounds. Use more than one person to lift objects that are bulky/awkward. Stretch back and arms before using the hand auger. Lifting safety is described in Section 4.3.6.
	Heat Stress	Wear light clothing that covers arms and legs. Monitor hydration. Exposure monitoring and weather-related clothing for heat stress is described in Section 4.3.1 of the SSHP document.
	Cold Stress	Wear cold weather clothing such as Carhards. Monitor hydration and cold effects on outer limbs. Exposure monitoring and weather-related clothing for cold stress is described in Section 4.3.2 of the SSHP document.
	Chemical Spills	Carry and store containers of acetone and methanol in plastic trays in a manner that the containers do not bang into each other. Conduct all decon activities out of doors. Let minor spills evaporate allowing no sources of ignition near the spill.
	Foot and vehicular traffic	Use cones and barrier tape to demarcate hazard area. Use traffic cones in the direction of on-coming traffic to warn motorists of the presence of a parked vehicle.
EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
<ol style="list-style-type: none"> Global positioning system (GPS) Stainless steel bucket augers T-handle and drill rods Food-grade disposable pans (deep) Stainless steel trowels, spoons, and spatulas Disposable gloves 	Calibration of GPS according to manufacturer's recommendations.	40-hour HAZWOPER 8-hour HAZWOPER Refresher SOPs 1, 2 and 4

7. Plastic zip-lock bags		
8. Plastic garbage bags		
9. Measuring tapes		
10. Polyethylene sheeting		
11. Aluminum foil		
12. 8-oz glass sample jars		
13. Topsoil or potting soil		
14. Paper towels		
15. Sample coolers		
16. Ice		
17. Traffic cones		
18. Barrier tape		

Table 4-1: Task Hazard Analysis (continued)

PRINCIPAL TASK/STEP	SAFETY/HEALTH HAZARDS	RECOMMENDED CONTROLS
Indoor Dust Sampling	Inhalation Hazards (dust) Minimal	Dust mask may be required during handling of the vacuum cleaner bags.
	Ingestion/Dermal Contact	Use of PPE is required and discussed in SOP 3. Wash hands and face prior to eating or drinking. Protect hands and eyes from contact with methanol. Adherence to safety standard operating procedures is discussed in Section 12.0.
	Slips and Falls	Leather safety boots with steel-toes and non-skid soles to protect against sharp or heavy objects and slippery ground and floors. Practice good work area housekeeping (e.g., keep walkways clear of equipment).
	Lifting Hazards	Use proper lifting techniques (e.g., bend legs, not back). Use an individual limit of 40 pounds. Use more than one person to lift objects that are bulky/awkward. Stretch back and arms prior to carrying equipment. Lifting safety is described in Section 4.3.6.
	Electric (Vacuum) Tools	If a Ground Fault Circuit Interruptor (GFCI) protected outlet is not available, utilize a portable GFCI when working in wet areas. Unplug tools when changing hose and nozzle.
	Noise	Use of appropriate PPE, including ear plugs or muffs, may be required and discussed below.
	Chemical Spills	Carry and store containers of acetone and methanol in plastic trays in a manner that the containers do not bang into each other. Conduct all decon activities out of doors. Let minor spills evaporate allowing no sources of ignition near the spill.
EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
1. Nilfisk Model GS-80 vacuum cleaner (or equivalent) 2. Two meter folding ruler or similar device 3. Masking tape 4. Clean aluminum foil 5. Shaker sieve, as specified in ASTM D422, with 100-mesh screen 6. Analytical balance [sensitive to a minimum 0.1 milligram (mg) and weighing range of 0.1mg]	Pre-use inspection of vacuum cleaner according to manufacturer's recommendations.	40-hour HAZWOPER 8-hour HAZWOPER Refresher SOPs 1, 3 and 4

- 1000 grams(g)].		
7. Distilled water		
8. Methanol		
9. Kimwipes TM or other laboratory tissue		
10. Vacuum collection bags		
11. Bottle brush		
12. Scrub brush		
13. Polyliners		
14. 32-ounce glass jars or plastic bags		
15. Cooler		
16. Ice.		

4.2 CHEMICAL HAZARDS

Table 4-2 lists OSHA Permissible Exposure Limits (PELs), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), and NIOSH Immediately Dangerous to Life or Health (IDLH) concentrations for chemicals that are suspected to be present on the site and for those that will be used during sample collection and equipment decontamination. The primary hazard presented by the acetone and the methanol is flammability.

Table 4-2: PELs, TLVs and IDLHs

CONSTITUENT	PELs	TLVs	IDLH
Acetone	1,000 ppm	500 ppm	2,500 ppm
Methanol	200 ppm	200 ppm	6,000 ppm
PCBs 42%	1 mg/m ³	1 mg/m ³	5 mg/m ³
PCBs 54%	0.5 mg/m ³	0.5 mg/m ³	5 mg/m ³
Total Dust	10 mg/m ³	15 mg/m ³	NA

PEL and TLV values are 8-hour time-weighted averages (TWAs)

Sources: PEL: 1910.1000 Table Z-1 :Limits for Air Contaminants, www.osha.gov;

IDLH, TLV: <http://www.cdc.gov/niosh/idlh/intridl4.html>

Hazardous materials monitoring (if applicable) is discussed in Section 8.

4.3 PHYSICAL HAZARDS

All field activities that will occur at the OU-1 properties are outlined in the FSP. The following subsections discuss physical hazards that may be encountered during field activities, and control measures with which to minimize the potential for an incident.

4.3.1 Heat Stress

Exposure monitoring and actions required for heat stress are described in Section 7.0.

4.3.2 Cold Stress

Exposure monitoring and required actions for cold stress are described in Section 7.0.

4.3.3 Noise Hazards

Malcolm Pirnie requires the use of hearing protection by all employees when noise levels exceed 85 decibels. Hearing protection will be used which yields a Noise Reduction Rating (NRR) that reduces the noise level to below 80 dBA when placed in the ear canal.

4.3.4 Slip, Trip, and Fall Hazards

Hazards

Irregularities in the surface conditions at OU-1 properties may pose a slip, trip, or fall, hazards to workers. Trip hazards at residential properties include uneven ground in property yards, in-ground sprinkler systems, children's toys, and obstructions in walkways. There are potential hazards from the presence of wet areas, puddles, icy areas, or snowy areas that may be within walkways or open spaces.

Within OU-1 property buildings, waxed floors, unanchored rugs, and walkway obstructions pose potential slip, trip, and fall hazards to workers.

Control Measures

Slip, trip, and fall hazards must be controlled by exercising care and caution when working at the OU-1 properties. Good housekeeping practices must be maintained for work areas. Field personnel will be briefed by the PSO each morning on the location and type of obvious hazards in the work areas.

Personnel are to take care in areas where ground irregularities or low-lying obstacles exist and may not be observed due to vegetation. Such objects will be moved or flagged (if not movable) when observed. Workers are to take care within OU-1 properties buildings where irregular or slippery surfaces and/or narrow walkways may pose potential slip, trip, and fall hazards. Field personnel will wear 6", over the ankle, steel-toed, chemically resistant leather work boots with a defined heel and traction soles to protect against sharp or heavy objects and to protect against uneven or slippery walkways.

4.3.5 Sanitation

Field activities will be conducted in accordance with the OSHA sanitation standard (29 CFR 1910.141). Office trailers maintained by Severson Environmental Services, Inc. located nearby at the CDE facility are equipped with sanitary toilet facilities and are accessible to the OU-1 sampling team. Field team members will be provided with an antibacterial gel (e.g. Purel) if potable water is not available at the toilet facilities.

4.3.6 Lifting Safety

Hazards

Lifting and moving of heavy or awkwardly-balanced objects may result in injury. Lifting and moving of sampling equipment may involve heavy or awkward items.

Control Measures

Using proper lifting techniques may prevent back strain or injury. The fundamentals of proper lifting include:

- Consider the size, shape, and weight of the object to be lifted. A mechanical lifting device (such as a winch) or additional persons must be used to lift an object if it cannot be lifted safely alone.
- The hands and the object should be free of dirt or grease that could prevent a firm grip.
- Gloves must be used, and the object inspected for metal slivers, jagged edges, burrs, or rough or slippery surfaces.

- Fingers must be kept away from points that could crush or pinch them, especially when putting an object down.
- Feet must be placed far enough apart for balance. The footing should be solid and the intended pathway should be clear.
- The load should be kept as low as possible, close to the body with the knees bent.
- To lift the load, grip firmly and lift with the legs, keeping the back as straight as possible.
- A worker should not carry a load that he or she cannot see around or over.
- When putting an object down, the stance and position are identical to that for lifting; the legs are bent at the knees, and the back is straight as the object is lowered.

Malcolm Pirnie personnel should not lift drums that are not completely empty.

The use of a hand auger can be strenuous for personnel not used to working with this tool. Stretching to loosen and warm up back and arm muscles should be completed by staff prior to using the auger.

4.3.7 Ladder Safety

Hazards

It is not anticipated that ladder use will be required for sampling activities at the OU-1 properties.

4.3.8 Overhead Hazards

It is not anticipated that overhead hazards will be encountered during sampling activities at the OU-1 properties.

4.4 BIOLOGICAL HAZARDS

Homeowner pets may be encountered during sampling activities. It is not anticipated that these animals will pose a hazard, but all should be kept at a distance to ensure that an

unanticipated reaction does not result in injury. Field personnel may request that homeowners securely tie up or otherwise sequester all animals prior to entering the property.

Rats, feral dogs, and raccoons may pass through or inhabit parts of the nearby CDE facility. Rats and raccoons that are outside during daylight are to be avoided as they may be rabid. Feral dogs may travel in packs. Never turn your back and run. Face the animal, making as much noise as possible, and move slowly to shelter or your vehicle without breaking eye contact.

5.0 PERSONAL PROTECTIVE EQUIPMENT

5.1 GENERAL PROTECTION LEVELS

Personnel must wear protective equipment when work activities involve known or suspected radiological or chemical atmospheric contamination; when vapors, gases, or particulates may be generated; or when direct contact with dermally active substances may occur. Respirators can protect the mucous membranes, the lungs, the gastrointestinal tract and the eyes against air toxicants. Chemical-resistant clothing can protect the skin from contact with skin-destructive and skin-absorbable chemicals. Good personal hygiene limits or prevents the ingestion of materials.

Level D/Modified Level D: Level D has been selected since there will not be respiratory or skin hazards that cannot be controlled by the use of gloves.

Table 5-1: Required Level of Protection

Study	Anticipated Level of PPE
Surface and sub-surface soil sampling	Level D (Modified Level D if warranted by conditions)
Indoor dust sampling	Level D (Modified Level D if warranted by conditions)

The levels of protection identified in Table 5-1 require the following equipment:

Level D

Equipment Requirements for Level D are as follows:

- Coveralls or suitable work clothing, in accordance with weather conditions (e.g., blue jeans and t-shirt);
- Outer gloves (Nitrile), chemical-resistant;
- Inner gloves (Latex), chemical-resistant (optional);
- Chemical-resistant, steel toed safety boots which meet American National Standards Institute (ANSI) Z41;

- Safety glasses or chemical splash goggles which meet ANSI Z87.
- Hearing protection [if noise levels exceed 85 dBA, then hearing protection must be used with an appropriate OSHA Noise Reduction Rating (NRR) of at least 20 dBA, in accordance with American National Standards Institute (ANSI) Standards and Malcolm Pirnie policy].
- Type II Reflective vest within 10 feet of streets/traffic.

Modified Level D

Personnel may choose to wear this level of protection if warranted by site conditions (e.g. extremely wet soils, presence of a ceiling fan in a home with a low ceiling). Equipment Requirements for Modified Level D are as follows:

- Impermeable disposable coveralls, such as Tyvek®, when muddy outdoor conditions are anticipated. [Note: Tyvek shall NOT be worn indoors under any circumstances without the express direction of the Malcolm Pirnie PM.]
- Outer gloves (Nitrile), chemical-resistant;
- Inner gloves (Latex), chemical-resistant (optional);
- Chemical-resistant, steel toed safety boots which meet American National Standards Institute (ANSI) Z41;
- Rubber booties if muddy outdoor conditions are anticipated;
- Safety glasses or chemical splash goggles which meet ANSI Z87;
- Hard hat when overhead hazards are present;
- Hearing protection [if noise levels exceed 85 dBA, then hearing protection must be used with an appropriate OSHA Noise Reduction Rating (NRR) of at least 20 dBA, in accordance with American National Standards Institute (ANSI) Standards and Malcolm Pirnie policy].
- Type II Reflective vest within 10 feet of streets/traffic.

5.2 INSPECTION AND USE OF PPE

5.2.1 Inspection of PPE

Before use of protective clothing, all personnel shall determine that the clothing material is correct for the specified task at hand. The clothing is to be visually inspected for imperfect seams, non-uniform coatings, tears, and malfunctioning closures. It is to be held up to the light to check for pinholes. It is to be flexed to observe for cracks or other signs of shelf deterioration. If the product has been used previously, it should be inspected inside and out for signs of chemical deterioration, such as discoloration, swelling and stiffness. During work, the clothing should be periodically inspected for evidence of chemical deterioration, closure failure, tears, punctures and seam discontinuities.

Before using gloves, check for pinhole leaks. Equipment that is found to be defective must be replaced immediately.

5.2.2 PPE Donning Procedures

The following procedures shall be used when donning PPE:

- Remove bulky outerwear, remove street clothes, and store in clean location;
- Put on work clothes or coveralls;
- Put on the required protective coveralls (if applicable);
- Put on the required protective gloves;
- Don remaining PPE, such as safety glasses or goggles.

5.2.3 PPE Doffing Procedures

Decontamination will not be required when personnel leave the work area. Protective coveralls and gloves worn during the collection soil samples will be removed and discarded prior to entering property buildings or personnel vehicles. Safety glasses or goggles will not be discarded, but will be wiped down prior to entering property buildings or personnel vehicles, and between property sites.

All disposable equipment, garments, and PPE must be bagged in plastic bags, which must be labeled for disposal. Discussion of decontamination procedures for PPE and other equipment is provided in Section 5.0 of the FSP and Section 10.0 of the SSHP.

6.0 HEALTH AND SAFETY ORIENTATION TRAINING

6.1 INTRODUCTION

Malcolm Pirnie, Inc. personnel involved with the investigation activities are required to have completed the 40-hour Hazardous Waste Operations and Emergency Response site worker training as specified in 29 CFR 1910.120. This training, designed to orient personnel potentially exposed to hazardous substances, health hazards, and safety hazards, includes the following:

- Safety and health risk analysis.
- Use of PPE.
- Work practices by which the employee can minimize risks from hazards.
- Safe use of engineering controls and equipment.
- Medical surveillance requirements including recognition of symptoms and signs which might indicate overexposure to hazards.
- Procedures for environmental monitoring, site control, and decontamination.
- Emergency response plans.

All personnel will also have proof of attendance at an annual 8-hour Hazardous Waste Operations and Emergency Response site worker refresher course if their 40-hour course was completed more than a year prior to the start of field activities. In addition, a minimum of two field personnel with current CPR/First Aid Training and one with current IATA and/or USDOT Training will be present on-site during all field activities. A copy of all current training certificates will be kept in the Project Safety Notebook, which will be in the keeping of the PSO during OU-1 sampling activities. See Appendix D for training information.

6.2 SPECIALIZED TRAINING

Malcolm Pirnie employees, subcontractors, and other field personnel are to be knowledgeable in the particular hazards that may be encountered during this project and be

familiar with safe operating procedures. This will be accomplished through the review of this SSHP, specialized training prior to the commencement of the fieldwork, an audit of field activities and safety meetings during the program, as discussed below. Forms for the documentation of site-specific training are contained in Appendix D.

CPR and First Aid training is encouraged for all field personnel. The PSO and all supervisory personnel will have attended additional training, including CPR, First Aid, and 8-hour Hazardous Waste Operations and Emergency Response Supervisor training. Subcontractors will be responsible for ensuring that their employees receive and are current in all required Hazardous Waste Operations and Emergency Response and specialized training for their job functions and responsibilities.

Other specialized training which will be required before the commencement of field work will include the following:

- Lift training for all field team members
- Hazard Communication training for all field team members, including PCB-specific training.
- USDOT and IATA training for one field team member
- The PSO and alternate PSO will have current Supervisor training, and CPR/FA/BBP training.

6.2.1 Pre-Investigation Health and Safety Briefing

Malcolm Pirnie and subcontractor personnel involved with the project will attend a site-specific health and safety briefing prior to initiation of the field activities. The topics to be discussed will include:

- Characteristics and potential hazards of contaminants suspected to be present at the site.
- Approved routes to and away from the work areas.
- Personal protective clothing: function, donning/doffing.
- Personal hygiene.

- Location of available restrooms.
- General safety concepts.
- Emergency recognition and prevention.
- Temperature stress.
- Signs and symptoms of over exposure to site-specific chemical hazards.
- Hazard communication.
- Emergency action plan.
- Site contingency plans.

6.2.2 Tailgate Safety Meetings

The PSO or designee shall conduct morning safety and health briefings on a daily basis. Issues relative to temperature stress, or the interpretation of newly available environmental monitoring data are examples of topics that might be covered during these briefings. Visitors will be properly oriented to existing site conditions, planned activities, levels of personal protection, and other procedures outlined in this SSHP. The checklist for the tailgate safety meeting is included as Appendix E. A weekly copy is to be sent to the PM and the PCIH.

6.3 HAZARD COMMUNICATION

Malcolm Pirnie has a written hazard communication program which was established to meet the requirements of 29 CFR 1910.1200, and field activities shall be implemented in accordance with that program, as described below.

Material Safety Data Sheets (MSDSs) for hazardous chemicals introduced to the site by Malcolm Pirnie will be available at the OU-1 properties, in the keeping of the PSO, during sampling activities. Labels on containers used by Malcolm Pirnie are as originally received (not to be defaced) and are to contain the following information:

- (1) the identity of the hazardous chemical(s);
- (2) the appropriate hazard warnings; and

(3) the name and address of the chemical manufacturer.

If an employee transfers chemicals from a labeled container to a portable container, a label that contains those three items must be affixed to it. If the portable container is intended only for that employee's immediate use (i.e., during the same work shift), then the container may be clearly marked with only the product name. The employee will be responsible to properly empty, clean, or dispose of the portable container immediately after use.

As part of the site-specific health and safety orientation conducted by the PSO, a review of Malcolm Pirnie's hazard communication program will be included to inform employees of hazardous chemicals to which they may be exposed during field activities. If the chemical hazard changes or a new chemical hazard is introduced into the area after work begins, additional training will be provided by the PSO.

Site-specific hazard communication training for hazardous chemicals introduced to the site by Malcolm Pirnie will include:

- Properties and hazard (chemical, physical, toxicological) of each hazardous chemical;
- Health hazards, including signs and symptoms of exposure and any medical condition known to be aggravated by exposure;
- Measures employees can take to protect themselves, including: appropriate work practices or methods for proper use and handling, procedures for emergency response, and the proper use and maintenance of PPE, as required;
- Work procedures for employees to follow to protect themselves when cleaning hazardous chemical spills and leaks;
- Use of the container labeling system and the MSDSs including: where MSDSs are located, how to read and interpret the information on both labels and MSDSs, and how employees may obtain additional hazard communication information.

Site-specific hazard communications training will also cover hazardous chemicals introduced by other employers and shall emphasize:

- Information about the hazardous chemicals to which Malcolm Pirnie's employees may be exposed;
- An explanation of the labeling system other employers are using;
- Information about the precautionary measures Malcolm Pirnie employees need to take to protect themselves during normal operating conditions and in emergencies;
- Location of MSDSs for hazardous chemicals brought to the site by other employers.

A copy of this SSHP and MP's Hazard Communication policy will available at the OU-1 properties, in the keeping of the PSO, during sampling activities. In addition, MSDSs and portions of the SSHP will be compiled into a single binder and kept on-site during field activities.

7.0 MEDICAL SURVEILLANCE AND EXPOSURE MONITORING

7.1 MEDICAL SURVEILLANCE

Malcolm Pirnie personnel who may have potential exposure to hazardous materials will have an initial employment, an annual, and a termination examination. Medical evaluations will be performed by an approved occupational physician in accordance with Malcolm Pirnie's Medical Monitoring Program. All Malcolm Pirnie field personnel shall be enrolled in Malcolm Pirnie's Medical Monitoring Program, be medically approved to wear respirators, and fit-tested in accordance with OSHA requirements.

Purpose – The purposes of the medical evaluation are to: 1) determine fitness for duty on hazardous waste sites; and 2) establish baseline data for future reference. Such an evaluation is based upon the employee's occupational and medical history, a comprehensive physical examination, and an evaluation of the ability to work while wearing protective equipment. The medical examination must include an OSHA-type evaluation of the worker's ability to use respiratory protective equipment.

Supplemental Examinations – Supplemental examinations may be performed whenever there is an actual or suspected excessive exposure to chemical contaminants or upon experience of exposure symptoms, or following injuries or temperature stress.

7.2 HEAT STRESS MONITORING

Heat stress is caused by a number of interacting factors, including but not limited to: environmental conditions, clothing, workload, and the physical condition of the individual. Since heat stress is one of the most common illnesses associated with heavy outdoor work conducted with direct solar load and, in particular, because wearing PPE can increase the risk of developing heat stress, workers must be capable of recognizing the signs and symptoms of heat-related illnesses. Personnel must be aware of the types and causes of heat-related illnesses and be able to recognize the signs and symptoms of these illnesses in both themselves and their co-workers.

Hazards

The four major harmful effects of overexposure to heat are outlined and discussed below.

Heat Rashes

Heat rashes are one of the most common problems in hot work environments. Commonly known as prickly heat, a heat rash is manifested as red papules and usually appears in areas where the clothing is restrictive. As sweating increases, these papules give rise to a prickling sensation. Prickly heat occurs in skin that is persistently wetted by unevaporated sweat, and heat rash papules may become infected if they are not treated. In most cases, heat rashes will disappear when the affected individual returns to a cool environment.

Heat Cramps

Heat cramps are usually caused by performing hard physical labor in a hot environment. These cramps have been attributed to an electrolyte imbalance caused by sweating. It is important to understand that cramps can be caused both by too much or too little salt. Cramps appear to be caused by the lack of water replenishment. Because sweat is a hypotonic solution (+/- 0.3% NaCl), excess salt can build up in the body if the water lost through sweating is not replaced.

Thirst cannot be relied on as a guide to the need for water; instead, water must be taken every 15 to 20 minutes in hot environments. Under extreme conditions, such as working for 6 to 8 hours in heavy protective gear, a loss of sodium may occur. Drinking commercially available carbohydrate electrolyte replacement liquids is effective in minimizing physiological disturbances during recovery.

Heat Exhaustion

Heat exhaustion occurs from increased stress on various body organs due to inadequate blood circulation, cardiovascular insufficiency, or dehydration. Signs and symptoms include pale, cool, and moist skin; heavy sweating; dizziness; nausea; headache; vertigo; weakness; thirst; and giddiness. Fortunately, this condition responds readily to prompt treatment.

Heat exhaustion should not be dismissed lightly, however, for several reasons. One is that the fainting associated with heat exhaustion can be dangerous because the victim may be

operating machinery or controlling an operation that should not be left unattended; moreover, the victim may be injured when he or she faints. Also, the signs and symptoms seen in heat exhaustion are similar to those of heat stroke, which is a medical emergency. Workers suffering from heat exhaustion should be removed from the hot environment, be given fluid replacement, and be encouraged to get adequate rest.

Heat Stroke

Heat stroke is the most serious form of heat stress. Heat stroke occurs when the body's system of temperature regulation fails and the body's temperature rises to critical levels. This condition is caused by a combination of highly variable factors, and its occurrence is difficult to predict. Heat stroke is a medical emergency.

The primary signs and symptoms of heat stroke are confusion; irrational behavior; loss of consciousness; convulsions; a lack of sweating (usually); hot, dry skin; and an abnormally high body temperature [e.g., a rectal temperature of 41 degrees Celsius (°C) (equivalent to 105.8°F)]. If body temperature is too high, death can occur. The elevated metabolic temperatures caused by a combination of workload and environmental heat load, both of which contribute to heat stroke, are also highly variable and difficult to predict. If a worker shows signs of possible heat stroke, professional medical treatment should be obtained immediately.

The worker should be placed in a shady area and the outer clothing should be removed. The worker's skin should be wetted and air movement around the worker should be increased to improve evaporative cooling until professional methods of cooling are initiated and the seriousness of the condition can be assessed. Fluids should be replaced as soon as possible. The medical outcome of an episode of heat stroke depends on the victim's physical fitness and the timing and effectiveness of first-aid treatment.

Regardless of the worker's protestations, no employee suspected of being ill from heat stroke should be sent home or left unattended unless a physician has specifically approved such an order.

Proper training and preventive measures will help avert serious illness and loss of work productivity. Preventing heat stress is particularly important because once someone suffers from heat stroke or exhaustion, that person may be predisposed to additional heat injuries.

Control Measures

Measures to prevent heat stress include regular work breaks during field activity, regular fluid replenishment, the availability of shelter (i.e., shaded area), and wearing of appropriate clothing (e.g., lightweight clothes, light-colored clothes, breathable fabrics, hats to protect from the sun). All personnel will be made aware of the symptoms of heat stress. If one or more symptoms are detected, the affected worker will be assisted to seek shade, drink plenty of fluids, and seek medical attention, if required.

Several screening techniques can be used to detect early warning signs of heat stress. The PSO may choose to monitor heat stress by measuring body temperature as described below.

Body Temperature Measurement

Body temperature may be measured with a digital-readout clinical ear thermometer with disposable tips. The following method, based on body temperature measurements, is simple to perform, straightforward, and may be conducted by the PSO.

Body temperature may be measured for three minutes with an ear thermometer at the end of each work period and before drinking fluids. Temperature at the end of the work period should not exceed 99.6°F. If the temperature exceeds 99.6°F, then the next work period should be shortened by 10 minutes (or by 33%), while the length of the rest period is kept the same. If the temperature exceeds 99.6°F at the beginning of the next rest period, however, the following work cycle should be further shortened by 33%. Temperature should be measured again at the end of the rest period to make sure that it has dropped below 99.6°F. No worker may be permitted to continue wearing semi-permeable or impermeable garments when his/her temperature exceeds 100.6°F. If worker temperature exceeds 100.6°F (measured immediately prior to a rest period, one or more of the following control measures must be used to help control heat stress:

- Site workers will be encouraged to drink plenty of water and electrolyte replacement fluids throughout the day
- On-site drinking water will be kept cool (50 to 60°F).

- A work regimen that will provide adequate rest periods for cooling down will be established, as required.
- All personnel will be advised of the dangers and symptoms of heat stroke, heat exhaustion, and heat cramps.
- Cooling devices, such as vortex tubes or cooling vests, should be used when personnel must wear impermeable clothing in conditions of extreme heat.
- Site personnel should be instructed to monitor themselves and co-workers for signs of heat stress and to take additional breaks as necessary.
- A shaded rest area must be provided. All breaks should take place in the shaded rest area.
- Site personnel must not be assigned to other tasks during breaks.
- Site personnel must remove impermeable garments during rest periods. This includes white Tyvek-type garments, if worn.

All project personnel must be informed of the importance of adequate rest, acclimation, and proper diet in the prevention of heat stress disorders.

7.3 COLD STRESS MONITORING

Cold stress normally occurs in temperatures at or below freezing, or under certain circumstances, in temperatures of 40°F.

Hazards

Extreme cold for a short time may cause severe injury to exposed body surfaces or result in profound generalized cooling, causing death. Areas of the body that have high surface area-to-volume ratio, such as fingers, toes, and ears, are the most susceptible. Two factors influence the development of a cold weather injury: ambient temperature and the velocity of the wind. For instance, 10°F with a wind of 15 miles per hour (mph) is equivalent in chilling effect to still air at 18°F. An equivalent chill temperature chart relating the actual dry bulb temperature and wind velocity is presented in Table 7-1, below.

Table 7-1: Wind Chill Temperature Chart

Estimated Wind Speed (mph)	Actual Temperature Reading (°F)											
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	Equivalent Chill Temperature (°F)											
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148
(Wind speeds >40 mph have little additional effect.)	Little Danger: Maximum danger of false sense of security.				Increasing Danger: Danger from freezing of exposed flesh within one minute.			Great Danger: Flesh may freeze within 30 seconds.				
	Trench foot and immersion foot may occur at any point on this chart.											

Note: This chart was developed by the U.S. Army Research Institute of Environmental Medicine, Natick, MA (Source: ACGIH Threshold Limit Values for Chemical Substances and Physical Agents).

Frostbite is the generic term for a local injury resulting from cold. Several degrees of tissue damage are associated with frostbite. Frostbite of the extremities can be categorized into:

- Frost Nip or Incipient Frostbite - characterized by sudden blanching or whitening of skin.
- Superficial Frostbite - skin has a waxy or white appearance and is firm to the touch, but tissue beneath is resilient.
- Deep Frostbite - tissues are cold, pale, and solid; extremely serious injury.

Systemic hypothermia is caused by exposure to freezing or rapidly dropping temperature. It can be fatal. Its symptoms are usually exhibited in five stages:

- Shivering;
- Apathy, listlessness, sleepiness, and (sometimes) rapid cooling of the body to less than 95°F;
- Unconsciousness, glassy stare, slow pulse, and slow respiratory rate;

- Freezing of the extremities; and
- Death.

Trauma sustained in freezing or sub-zero conditions requires special attention because an injured worker is predisposed to secondary cold injury. Special provisions must be made to prevent hypothermia and secondary freezing of damaged tissues in addition to providing for first-aid treatment. To avoid cold stress, site personnel must wear protective clothing appropriate for the level of cold and physical activity. In addition to protective clothing, preventive safe work practices, additional training, and warming regimens may be utilized to prevent cold stress.

Control Measures

To prevent cold stress illnesses, follow the safety precautions listed below:

- Protective gloves are typically worn during field activities. These gloves offer some thermal protection.
- For air temperature of 0°F or less, mittens should be used to protect the hands. For exposed skin, continuous exposure should not be permitted when air speed and temperature results in a wind chill temperature of -25°F.
- At air temperatures of 36°F or less, field personnel who become immersed in water or whose clothing becomes wet must be immediately provided with a change of clothing and be treated for hypothermia.
- If work is done at normal temperature or in a hot environment before entering the cold, the field personnel must verify that their clothing is not wet due to perspiration. If wet, field personnel must change into dry clothes prior to entering the cold area.
- If the available clothing does not give adequate protection to prevent hypothermia or frostbite, work must be modified or suspended until adequate clothing is made available or until weather conditions improve.

- Appropriate clothing shall be worn by field personnel (e.g., hats, layered clothing, thermal underwear); field personnel will check that clothing does not interfere with ability to perform field tasks.
- Field personnel handling evaporative liquid (e.g., gasoline, alcohol, or cleaning fluids) at air temperatures below 40°F must take special precaution to avoid soaking of clothing or gloves with the liquids because of the added danger of cold injury due to evaporative cooling.

In addition, the following safe work practices should be employed to prevent cold stress:

- All field personnel will be provided with adequate cold weather gear including insulated coveralls, gloves or mittens, and cold weather boots. Warming facilities or equipment will be provided (e.g., heated car) and utilized by field personnel as needed. If extremely cold or severe weather conditions are forecast, work activities should be postponed.
- Direct contact between bare skin and cold surfaces (less than 20°F) should be avoided. Metal tool handles and/or equipment controls should be covered by thermal insulating material.
- For work performed in a wind chill temperature at or below 10°F, workers should be under constant protective observation (buddy system). The work rate should be established to prevent heavy sweating that will result in wet clothing. For heavy work, rest periods must be taken in heated shelters and workers should be provided with an opportunity to change into dry clothing if needed.
- Field personnel should be provided the opportunity to become accustomed to cold-weather working conditions and required protective clothing.
- Work should be arranged in such a way that sitting or standing still for long periods is minimized.
- During the warming regimen (rest period), field personnel should be encouraged to remove outer clothing to permit sweat evaporation or to change

into dry work clothing. Dehydration, or loss of body fluids, occurs insidiously in the cold environment and may increase susceptibility to cold injury due to a significant change in blood flow to the extremities. Fluid replacement with warm, sweet drinks and soups is recommended. The intake of coffee should be limited because of diuretic and circulatory effects.

The PSO shall be vigilant in order to identify hypothermia in its earliest stage, thus preventing a potential hazard to the worker. The most important sign of hypothermia is a change in behavior; this is often subtle and typically best recognized by a co-worker or the PSO. Physical and behavioral symptoms of hypothermia include:

- Pain in the extremities;
- Decrease in usual work efficiency;
- Forgetfulness and a decreased level of communication;
- Decline in manual dexterity;
- Poor motor skills or repetitive behavior;
- Poor judgment;
- Lack of concern for physical needs;
- Cold, pale skin appearance, shivering, and goosebumps;

Maximum severe shivering develops when the body temperature drops to 95° F. This must be taken as a sign of danger to workers and exposure to cold should be immediately terminated.

- Mild hypothermia is treated by re-warming the affected person by:
- Moving to a protected area;
- Removing wet or damp clothing and changing into dry clothing;
- Drinking warm fluids;
- Wrapping in dry blankets;

More severe cases of hypothermia require prompt intervention by medical personnel in addition to the above activities. Refer to Section 12.4 for directions to the nearest hospital.

Mild cases of frostbite (i.e., the affected area can still be sensed as painful) may be treated in the field by re-warming. More serious cases of frostbite should be treated at a medical facility since attempting to thaw the frozen area may cause severe damage. A victim of serious frostbite will be protected from the environment and protected from further heat loss, but the skin should not be rubbed or thawed with warm water or dry heat.

7.4 NOISE EXPOSURE MONITORING

As part of the required baseline annual or bi-annual medical evaluation all employees undergo an audiometric evaluation. The annual or bi-annual audiogram is compared to the baseline to determine if the employee has had a Standard Threshold Shift (STS). As part of the required baseline annual or bi-annual medical evaluation all employees undergo an audiometric evaluation. The annual or bi-annual audiogram is compared to the baseline to determine if the employee has had a Standard Threshold Shift (STS).

While working on various tasks during this project, employees may be exposed to noise levels in excess of the OSHA PEL of 90 decibels on the A-weighted scale (dBA) for a short period of time. As part of the hazard evaluation, noise levels may be evaluated periodically during this project to identify activities that subject employees to elevated noise levels. If possible, to control these elevated noise levels, engineering or administrative controls will be implemented. If these controls are not feasible, then hearing protection with an adequate NRR will be issued to these employees in accordance with MP's Corporate Hearing Conservation Program (provided as Appendix F).

8.0 HAZARDOUS MATERIAL MONITORING

As a result of the hazard assessment on the tasks currently described in Section 4.0, and recognizing that this sampling will be performed in a residential setting, exposure monitoring will not be required for these tasks.

9.0 SITE CONTROL MEASURES

Access of non-essential personnel to the OU-1 properties will be controlled by the FTL and the PSO. Only personnel who are essential to the completion of the task and wearing the prescribed level of protection will be allowed access to these areas. Entrance of non-Malcolm Pirnie or subcontractor personnel must be approved by the PSO based on that person's documentation of training described in Section 6.0.

10.0 USACE ACCIDENT REPORTING AND RECORDKEEPING

10.1 EXPOSURE DATA COLLECTION

The PSO or suitable designee will be responsible for collecting employee exposure data. Health and safety exposure monitoring will be conducted in accordance with Sections 4.0, 7.0 and 8.0. Malcolm Pirnie Safety Statistics for the years 2000-2006 are included in Appendix B.

10.2 ACCIDENT INVESTIGATIONS AND REPORTS

As stated in Section 13.3.3, all persons must report any near-miss incident, accident, injury, or illness to their immediate supervisor or the FTL. The FTL must conduct an accident investigation as soon as emergency conditions no longer exist and/or first-aid or medical treatment has been administered. The report must be completed and submitted to the PSO and PIH within 24 hours after the incident. An Incident/Near Miss Investigation Report is included in Appendix H.

10.3 IMMEDIATE NOTIFICATION OF MAJOR ACCIDENTS

All project team members are responsible for notifying the PCIH and PM of all injuries or occupationally related illnesses which occur incidentally to this project. Accident reporting procedures are detailed in Section 13.6.

11.0 DECONTAMINATION PROCEDURES

11.1 INTRODUCTION

The degree of decontamination required is a function of both a particular activity and the physical environment within which it takes place. Decontamination procedures for personnel, equipment, and PPE are described below. The PSO or designee will monitor these procedures.

11.2 PERSONNEL DECONTAMINATION

It is not anticipated that personnel decontamination will be required during sampling.

11.3 EQUIPMENT DECONTAMINATION

All potentially contaminated equipment will remain in the work zone until the end of the activity. In the event that field decontamination of equipment is necessary, the following reagents may be used: Alconox, analyte free water, methanol or acetone. MSDSs for these chemicals can be found in Appendix G. Detailed information on equipment decontamination is included in SOP 4, Attachment 2 of the FSP.

11.4 PPE DECONTAMINATION

Where and whenever possible, single-use, disposable, external protective clothing must be used for work. Boots and safety glasses should be free of gross particulates when entering a property to conduct indoor sampling. Personnel should remove and discard disposable PPE prior to entering an OU-1 for indoor sampling property or a personnel vehicle. Any visible soils should be brushed off prior to disposal. If visible dust is observed on disposable PPE once indoor dust or wipe sampling is complete, personnel should proceed outside before brushing off the observed material and removing the PPE for disposal. Disposable PPE will be placed in a trash bag and disposed of as normal domestic waste.

11.5 DECONTAMINATION FOR MEDICAL EMERGENCIES

It is not anticipated that decontamination will hinder the response to a medical emergency. First aid treatment should be administered in all cases unless the environmental conditions would be considered "Immediately Dangerous to Life or Health," in which case all personnel shall evacuate the site.

11.6 WASTE DISPOSAL PROCEDURES

Reagents used during decontamination will be collected for disposal in accordance with Section 8.0 of the FSP. All discarded materials, waste materials, or other objects will be handled in such a way as to preclude the potential for creating a sanitary hazard or causing litter to be left on-site. All materials will be collected and bagged for appropriate disposal as normal domestic waste.

12.0 STANDARD OPERATING PROCEDURES FOR SAFETY

12.1 GENERAL REQUIREMENTS

The Cornell-Dubilier Site contains a range of physical hazards that must be understood by all field personnel assigned to work on this site. At a minimum, the safe work practices to be followed at the site shall include:

- The number of personnel and equipment on the site shall be minimized, consistent with effective site operations.
- On-site personnel shall use the “buddy” system. No one may work alone (i.e., out of earshot or visual contact with other workers). In addition, if multiple field teams are assigned, each field team will be required to carry a two-way radio and have access to a cellular phone.
- Site activities will be performed to minimize dust production.
- Contact with materials either suspected or known to be contaminated will be avoided to minimize the potential for transfer to personnel, as well as cross contamination and the need for decontamination.
- Eating, drinking, chewing gum or tobacco, smoking, or any practice which increases the probability of hand-to-mouth transfer of contaminated material, is strictly prohibited in the work area.
- Medicine and alcohol can potentiate the effects of exposure to toxic chemicals. Due to possible interactions, use of prescribed drugs should be reviewed with Malcolm Pirnie’s occupational physician. Alcoholic beverage and illegal drug intake are strictly forbidden during site work activities.
- When it is necessary for a visitor to observe the fieldwork, that person will be issued appropriate PPE, briefed on potential hazards, safety practices, decontamination procedures and site communications. All site visitors must supply proof of training testing to the PSO or designee.
- All employees have the obligation to correct or report unsafe work conditions.

13.0 EMERGENCY RESPONSE PLAN

13.1 GENERAL

This section presents emergency response procedures, including medical emergencies and injury, first aid treatment, illness, near-miss reporting requirements, and fire and spill response protocols.

Each work area will be evaluated for the potential for fire, explosion, chemical release, or other emergency. An evacuation route from each specific work area must be identified prior to beginning work in the area.

Unusual events, activities, chemicals, and conditions must be reported to the FTL/PSO immediately. The FTL/PSO will discuss and resolve these issues with the PCIH, the Health and Safety QA/QC Officer, and/or the PM as appropriate.

13.2 EMERGENCY EQUIPMENT

Emergency equipment will be readily accessible and distinctly marked. Malcolm Pirnie personnel shall be familiar with the location of, and trained in the use of, emergency equipment. The following emergency equipment items will be available on-site in a Malcolm Pirnie field vehicle:

Fire Extinguishers

Malcolm Pirnie will provide fire extinguishers. Class A and C fire extinguishers shall be located on-site. Immediately after each use, fire extinguishers are to be either recharged or replaced. Fire extinguishers are to be suitably placed, distinctly marked, and readily accessible.

First Aid Kits

First Aid Kits shall conform to applicable good health standards, and shall consist of a weatherproof container with individually-sealed packages for each type of item. First Aid Kits will be fully equipped before being sent out on each job and will be checked by the PSO to ensure that any expended items are replaced. First Aid Kits shall be suitably placed, distinctly marked, and readily accessible.

Eye Wash

In the event of contamination by dust particles during any remedial activity, a portable emergency eye wash will be available on-site during all field activities. Eye washes will be checked by the PSO to ensure that they have not expired. Portable eye wash stations shall be readily accessible during sampling activities.

13.3 EMERGENCY RESPONSE

If an incident (e.g., injury, fire) occurs, the FTL must take the following steps:

- Evaluate the incident and assess the need for assistance and/or evacuation;
- Call for outside assistance as needed;
- Notify the PSO, PM, and PCIH of the incident;
- Notify USACE and its representatives of the incident; and
- Take appropriate measures to stabilize the incident scene.

In the event of an accident (e.g., accident involving personal or property damage), the personnel involved will immediately notify emergency services by dialing 911, so that the proper emergency personnel can respond. Following this call, the same personnel will notify the appropriate PSO, PM, and PCIH. In addition, appropriate emergency measures will immediately be taken by site personnel to assist those who have been injured and to protect others from hazards. These measures may include contacting the relevant authorities (depending on the nature of the emergency) and/or health care facilities and moving those involved to a secure location, as appropriate. If necessary, the PM will call the New Jersey State Spill Response at (877) 927-6337 to report any spills that occurred as a result of the accident.

Upon the occurrence of any event during the performance of the work which requires reporting to the National Response Center under Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), such reporting will be made, as well as any required notifications and reports to the USEPA and the New Jersey Department of Environmental Protection (NJDEP).

In the event of any action or occurrence during the performance of the work which causes or threatens to cause a release of a hazardous substance that may present an immediate threat to public health or welfare or the environment, the USACE and the NJDEP will be notified by the PM immediately upon obtaining knowledge of such action or occurrence. Such notifications will be made to the USACE PM (or to alternate contacts, in the case of unavailability).

In the event of emergency, the FTL must take all reasonable measures to confirm that the fire, explosion, or discharge does not occur, recur, or spread to other materials or waste at the site. These measures include stopping operations, collecting and containing released materials or wastes, and removing or isolating containers.

The following sub-sections present emergency contacts, and procedures for medical emergency, fire response and spill prevention/response.

13.3.1 Emergency Contacts

The means to summon local public response agencies such as the police, fire, and ambulance, by dialing 911, shall be reviewed during each daily safety meeting.

In Table 13-1, emergency contact information is provided. General/Federal/State contact is provided first; Malcolm Pirnie contact information is provided next; followed by contact information for South Plainfield, NJ.

Table 13-1: Emergency Contacts

Contact	Telephone Number
GENERAL/FEDERAL/STATE	
Emergency Response (Fire, Police, Medical, etc.)	911
Poison Control Center	(800) 336-6997
National Response Center and Terrorist Hotline	(800) 424-8802
USACE PM:	Ken Maas, 816-389-3709
USEPA PM:	Pete Mannino, 212-637-4395
MALCOLM PIRNIE	
MP Project Manager	Ed Dudek 914-641-2686
MP Project Certified Industrial Hygienist	Charles Meyers, CHMM, CIH, CIPS, CPEA 914-484-7151
MPI PSO and Field Team Leader	Doug Auld 201-398-4351
New Jersey State Police	(609) 882-2000 (Headquarters, West Trenton) (973) 344-1704 (Newark)
New Jersey Department of Environmental Protection	(877) 927-6337 (24-hour Emergency Control Center) (609) 292-3131 (General Information)
Port Authority of NY & NJ - Police, Central Police Desk	(973) 963-7111
CITY OF SOUTH PLAINFIELD	
Police Department	911 (Emergency) (908) 755-0700
Fire Department	911 (Emergency) (908) 756-4701

13.3.2 Medical Emergency

All employee injuries must be promptly reported to the FTL, who will:

- Verify that the injured employee receives prompt first aid and medical attention; and
- In emergency situations, the individual is to be transported by appropriate means to the nearest urgent care facility (normally a hospital emergency room).

Appendix D provides a summary of field team personnel who are trained in CPR/First Aid. Rescue and medical duties for project team members (e.g., PSO, FTL) are discussed throughout the remainder of this section.

13.3.3 First Aid

All persons must report any near-miss incident, accident, injury, or illness to their immediate supervisor or the FTL. First aid will be provided by trained personnel. Injuries and illnesses requiring medical treatment must be documented. The FTL will provide the basic information regarding the accident or injury to the appropriate COR departments and General Counsel for vehicular and property damage issues. The FTL must conduct an accident investigation as soon as emergency conditions no longer exist and first-aid and/or medical treatment has been administered. The report must be completed and submitted to the PSO, the Health and Safety QA/QC Officer, and PM within 24 hours after the incident. The PM will submit the investigation report to General Counsel in draft form within one week of the incident.

If first-aid treatment is required, first-aid kits kept at the field office will be used. If treatment beyond first aid is required, the injured should be transported to the nearest medical facility. If the injured person is not ambulatory, or shows any sign of not being in a comfortable and stable condition for transport, then an ambulance/paramedic should be summoned. If there is any doubt as to the injured worker's condition, it is best to let the ambulance service examine and transport the worker.

13.3.4 Emergency Care Steps

The steps listed below must be followed in the event of an emergency at the site:

- Survey the scene. Determine if it is safe to proceed. Try to determine if the conditions that caused the incident are still a threat. Protect yourself from exposure before attempting to rescue the victim.
- Do a primary survey of the victim. Check for airway obstruction, breathing, and pulse. Assess likely routes of chemical exposure by examining the eyes, mouth, nose, and skin of the victim for symptoms.

- Phone Emergency Medical Services (EMS). Give the location, telephone number used, caller's name, what happened, number of victims, victims' condition, and help being given.
- Maintain airway and perform rescue breathing as necessary.
- Perform CPR as necessary.
- Do a secondary survey of the victim. Check vital signs and do a head-to-toe exam.
- Treat other conditions as necessary. If the victim can be moved, take him/her to a location away from the work area where EMS can gain access.

13.3.5 Inhalation

Any employee complaining of symptoms of chemical overexposure shall be removed from the work area and transported to the designated medical facility for examination and treatment.

13.3.6 Ingestion

Call EMS and consult a Poison Control Center for advice. If available, refer to the MSDS for treatment information, if recommended. If unconscious, keep the victim on his/her side and clear the airway if vomiting occurs.

13.3.7 Skin Contact

Personnel who have had skin contact with site chemicals of concern will, unless the contact is severe, proceed through the decontamination zone to the wash-up area. Personnel must remove any contaminated clothing, and then flush the affected area with water for at least 15 minutes. The individual should be transported to the medical facility if he/she shows any sign of skin reddening or irritation, or if he/she requests a medical examination.

13.3.8 Eye Contact

Field personnel who have had site chemicals of concern splashed in their eyes or who have experienced eye irritation while in the contaminated zone must immediately proceed to the eyewash station, set up in the decontamination zone.

Do not decontaminate prior to using the eyewash. Remove whatever protective clothing is necessary to use the eyewash. Flush the eye with clean running water for at least 15 minutes. Arrange prompt transport to the designated medical facility (see Section 13.4).

13.3.9 Fire/Explosion Response

In the case of a fire or explosion, the FTL shall notify local fire and police department (See Table 13-1), and other appropriate emergency response groups as necessary. Project personnel will attempt to extinguish the fire with available extinguishers, if safe and trained to do so. In the event of a fire that project personnel are unable to safely extinguish, project personnel are to evacuate to the gathering point selected in that morning's tailgate meeting. The FTL shall assess the situation and assist the local fire department if requested.

13.3.10 Spill Prevention/Response

This sub-section details requirements for activities to be performed to prevent, or if occurred, minimize the impacts from an accidental spill or other release of fuels, oils, or other hazardous materials brought on site during project activities. The expected risk of spills of acetone or methanol are minimal and can be controlled by limiting the quantity brought to the site, limiting the quantity in each container, and storing and transporting the containers in plastic trays of sufficient depth to hold the volume of the containers.

13.3.11 Spill Response Procedures

In the event of a release, the following steps will be taken by the person or persons noting the release:

- Notify the FTL immediately;
- Evacuate immediate area of release.

13.3.12 Spill Reporting Requirements

At a minimum, personnel reporting a significant spill or release must provide the following information to the FTL (using the Incident/Near-Miss Investigation Report provided as Appendix H):

- Location of the release or threatened release;
- The material released or threatened to be released;
- The approximate quantity and concentration of the release or threatened;
- Any other information as required for compliance with National Response Center (NRC) or NJDEP reporting requirements.

The FTL will then contact the appropriate PM and PCIH and notify them of the incident. The PM will notify USACE and its representatives of the incident and determine if reports to the NRC or NJDEP are required.

13.3.13 Emergency Information

The means to summon local public response agencies such as police, fire, and ambulance will be reviewed in the daily safety meeting. Emergency contacts are listed in Table 13-1. The following sub-sections provide information on medical emergencies and first aid while working at the site.

13.3.14 Spill Containment

The goal of spill control is to avoid spilling potentially hazardous liquids or solids at anytime, especially during transfer, transport or disposal of these materials. In the unlikely event that a spill occurs, the spill will be contained and cleaned up in accordance with applicable federal and state requirements including 29 CFR 1910.120(j).

Small spills of acetone or methanol can be allowed to evaporate as long as sources of ignition are removed from the immediate area.

13.4 HOSPITAL LOCATIONS AND DIRECTIONS

Each of the hospitals listed in Table 13-2 has emergency room and parking facilities. Hospital Directions are provided in Appendix I.

Table 13-2: Hospitals in Vicinity of Cornell-Dubilier Site

Hospital	Approximate Distance	Approximate Travel Time	Telephone
JFK Medical Center 65 James Street Edison, NJ 08818	5.1 miles	17 minutes	(732) 321-7000
Muhlenberg Medical Center 1200 Randolph Road, Plainfield, NJ	3.1 miles	10 minutes	(908) 668-2000

Color maps of the OU-1 are will be provided for use in the field vehicles.

13.4.1 Personnel Roles, Lines of Authority, Communication

The PSO is the primary authority for directing operations at the Site under emergency conditions. Section 3.0, Project Organization and Responsibility, outlines the roles and responsibilities of safety personnel for the project.

13.4.2 Telephones/Radios

Telephones and hand signals will be used at the Site for communication. Cellular phones will be provided for each team working in the field. At least one member of each team is required to have one of these phones with them at all times.

13.4.3 Hand Signals

Hand signals will be employed by downrange field teams along with utilizing the buddy system. These signals (Table 13-3) are also very important when working with heavy equipment. The entire field team shall know them before operations commence and covered during site-specific training prior to fieldwork.

Table 13-3: Hand Signals and Meanings

HAND SIGNAL	MEANING
Hand gripping throat	"CAN'T BREATHE"
Grip wrist or both hands around waist	"Leave Area Immediately"
Hands on top of head	"Need Assistance"
Thumbs up	"OK, I am all right, I understand"

HAND SIGNAL	MEANING
Thumbs down	"No, Negative"

13.5 REPORTING ACCIDENTS, INJURIES, ILLNESSES, AND NEAR-MISS INCIDENTS

All injuries and illnesses, however minor, shall be reported to the FTL immediately. The FTL shall complete an Incident/Near-Miss Investigation Report (Appendix H) and submit it to the appropriate COR departments, HR for potential Workers Compensation issues; General Counsel for vehicular and property damage issues. The PM will submit a report to the USACE within 24 hours. No supervisor shall decline to accept a report of injury.

Near-miss incidents are situations in which no injury or property damage occurred, but under slightly different circumstances an injury or property damage could have occurred. Near misses are caused by the same factors as injuries; therefore, they must be reported on the Incident/Near-Miss Investigation Report (Appendix H) and investigated in the same manner.

An accident that appears to have any of the consequences listed below shall be immediately reported to the USACE. These accidents will be investigated in depth to identify all causes and to recommend hazard control measures.

- Fatal injury
- Permanent totally disabling injury
- Permanent partial disabling injury
- Three or more persons admitted to a hospital, or
- Property damage in an amount specified by USACE current accident reporting regulations.

Except for rescue and emergency measures, the accident scene shall not be disturbed until it has been released by the investigating official.

13.6 EVACUATION PROCEDURES AND SAFE DISTANCES

Evacuation procedures will occur at one level: (1) Site evacuation. If site evacuation is required, all field team members will be notified by cellular phone. Anticipated conditions that require this response are described in the following subsections.

13.6.1 Site Evacuation

Evacuation of the Site will be required when:

- A fire or major accident occurs; or
- An explosion is imminent or has occurred.

After determining that Site evacuation is warranted, the work crew will proceed outside of site-building and notify the PSO of site conditions. As more facts are determined from the field crew, they will be relayed to the appropriate agencies. The advisability and type of further response action will be coordinated and implemented by the PSO.

13.7 SITE SECURITY AND CONTROL

As stated in Section 9.0, access of non-essential personnel to the Work Zones will be controlled by the FTL and the PSO. Only personnel who are essential to the completion of the task and wearing the prescribed level of protection will be allowed access to these areas. Entrance of non-contractor or subcontractor personnel must be approved by the PSO based on that person's documentation of training described in Section 6.

13.8 EMERGENCY RESPONSE EVALUATION

In the aftermath of an emergency, before normal Site activities are resumed, personnel will be prepared and fully equipped to handle another emergency. The PSO will be responsible for restocking emergency supplies, replacing or repairing damaged equipment. The PM will notify appropriate government agencies as required. This includes OSHA if there has been a fatality or if five or more workers have been hospitalized.

The PM and PCIH are responsible for initiating an investigation and documenting the incident. This investigation will be designed to develop information about the institutional,

organizational, technical, and operational root causes of the accident or injury. Documentation will include the completion of the Malcolm Pirnie Supervisor's Incident Investigation Report and the following:

- A chronological history of the incident;
- Facts about the incident and when they became available;
- Title and names of involved personnel;
- Decisions made, orders given – to whom, by whom and when;
- Actions taken: who did what, when, where, and how;
- Environmental measurements;
- Potential exposures of Site personnel; and
- History of all injuries or illnesses during or as a result of the incident;

Before Site work resumes, a meeting will be held to review and revise all aspects of the SSHP according to new Site conditions, cleanup and/or other additional tasks required as a result of the incident, and lessons learned from the emergency response. This meeting will be attended by the PM, the PCIH or designee, the Field Team Leader, the PSO, representatives of partner firms whose operations or tasks were or could be impacted by the incident, and by representatives of any and all contractors whose operations or tasks were or could be impacted by the incident.

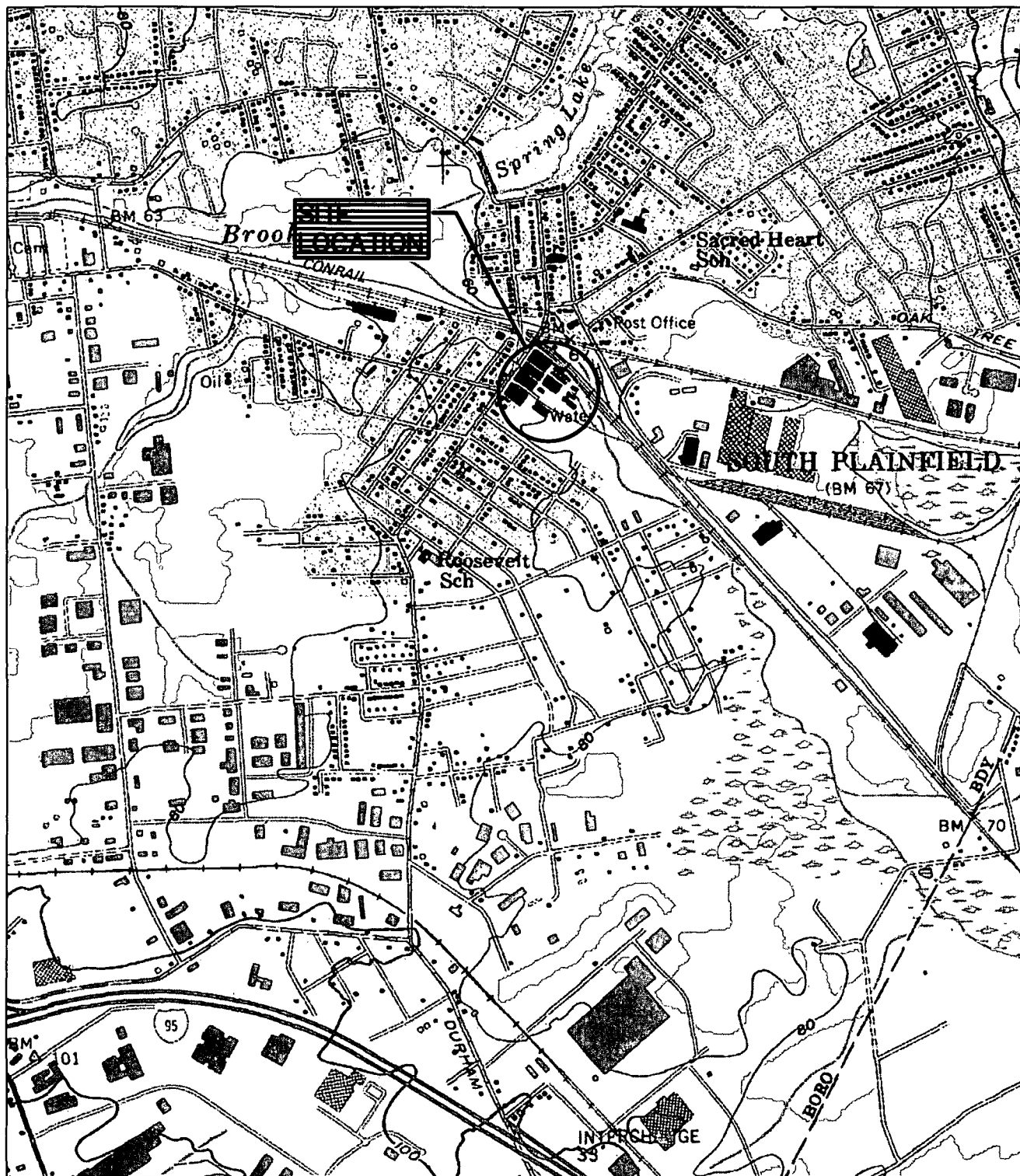
The purpose of the meeting will be to:

- Review the incident and unsafe conditions and/or act that resulted in the incident.
- Determine if and how these conditions or acts were preventable.
- Replace, or correct procedures that failed to result in desirable responses or activities.
- Determine if the incident has changed the Site profile and where and what that impact might be.

The result of the meeting will be:

- The generation of a series of action items which must be satisfactorily completed prior to the re-initiation of the Site activities.
- Developing, if required, appropriate changes to this SSHP.
- Retraining Site personnel in the changes to this SSHP.

Figures



SOURCE: U.S.G.S. TOPOGRAPHIC MAP,
7.5 MINUTE SERIES, PLAINFIELD, NEW JERSEY
QUADRANGLE, 1955, PHOTOREVISED 1981

REF:

**MALCOLM
PIRNIE**

U.S. ARMY CORPS OF ENGINEERS
CORNELL-DUBILIER SUPERFUND SITE
SOUTH PLAINFIELD, NJ

CONTRACT:
W912DQ-06-D-0006. TO 0018

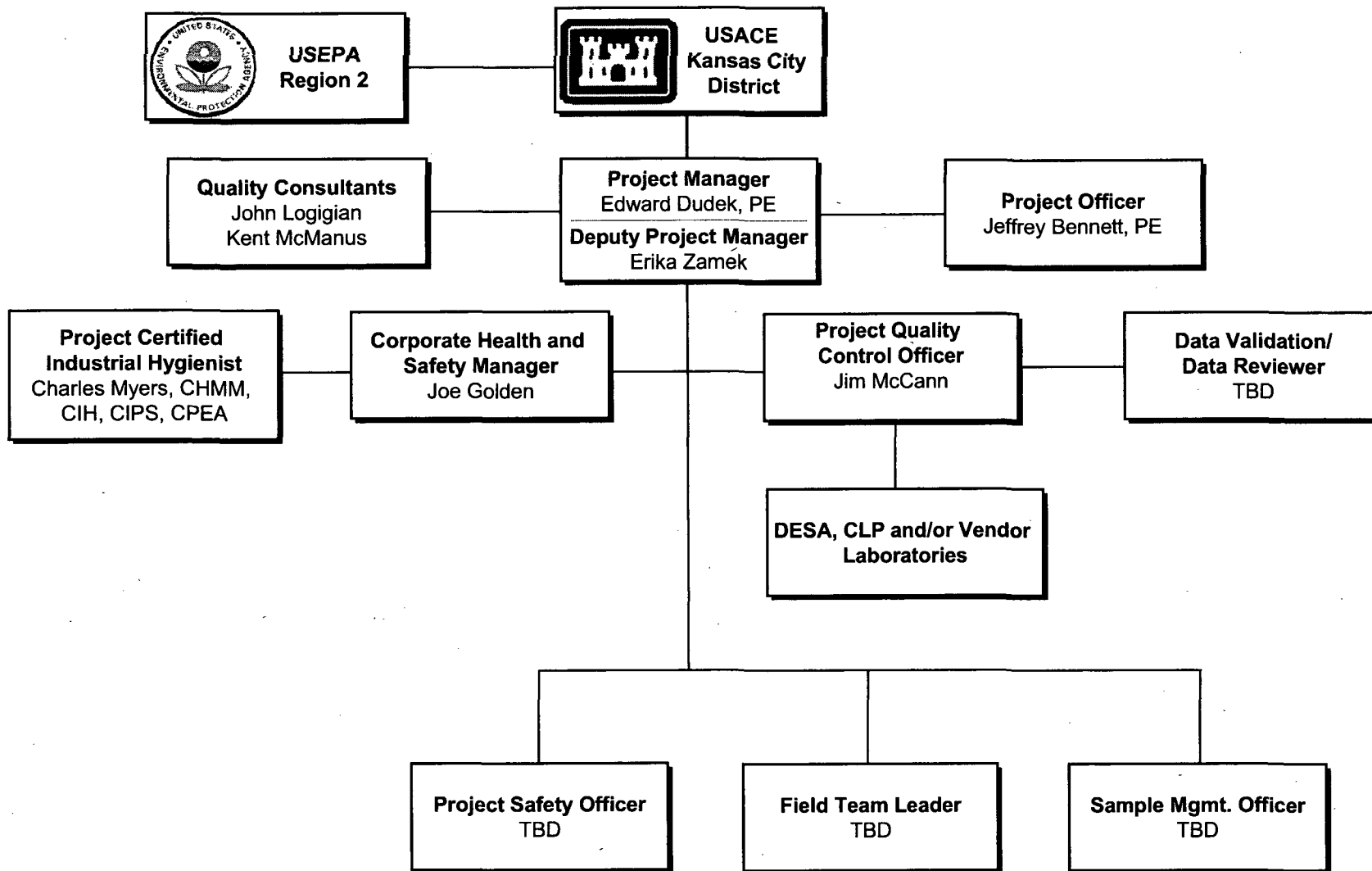
**SITE LOCATION
MAP**

SCALE AS NOTED

MALCOLM PIRNIE, INC.

MARCH 2008

FIGURE 1



Appendix A
Malcolm Pirnie, Inc. Corporate Health and Safety Policy and
Accident Prevention Plan

CORPORATE HEALTH & SAFETY PROGRAM

Malcolm Pirnie has one of the most progressive employee Health & Safety Programs in the industry. The Program emphasizes employee responsibility, participation and training. We offer 30 types of health and safety training including new employee orientation, all relevant HAZWOPER courses, confined space entry, first aid/CPR, and respiratory protection. We have recently added UXO (Unexploded Ordnances) and IATA training to our comprehensive list of training courses offered. For staff involved at construction sites, we have developed our own Construction Site Safety Training Program to address the potential workplace hazards inherent to those sites. Employees are often introduced to the Program during the required post-offer and annual physical examination that is a part of our Medical Surveillance Program. A measure of the Program's success is our low accident and injury rates, well below industry averages.

Firm Health & Safety Policy

Malcolm Pirnie is committed to providing a safe and healthful workplace, free of recognized hazards. In turn, employees are expected to be alert to health and safety hazards in their work environments, take appropriate precautions to avoid or control workplace hazards, wear personal protective equipment suitable for the exposure, comply with all company and health and safety policies and programs, and perform their work in a safe manner. This multi-level responsibility is applied to each project we perform by having the corporate health and safety officer, the project manager, the project safety officer, and all project staff read and sign-off on the cover page of all health and safety plans.

Malcolm Pirnie is also committed to conducting its operations according to applicable federal, state and local health and safety standards, regulations and laws, such as those of the Federal Department of Labor, the Occupational Health and Safety Administration, and the United States Environmental Protection Agency. Project Teams must plan and conduct their work activities in a responsible manner that reflects commitment to their personal well-being, that of our clients, and the general public. Project staff must be

CORPORATE HEALTH & SAFETY PROGRAM

current with the health and safety training and medical monitoring requirements consistent with their discipline and availability for field activities.

Ignoring or violating occupational health and safety regulations or policies may have severe personal and business consequences. An employee found to have violated these policies may be subject to disciplinary action up to and including termination of employment.

The effectiveness of Malcolm Pirnie's Health and Safety Program is demonstrated by its occupational injury and illness statistics. Malcolm Pirnie's 2005 Incident Rate is .86 compared to an industry average of 1.0 in 2004. Malcolm Pirnie's 2005 Lost Work Day Incident Rate is .36 as compared to an industry average of .6 for 2004. Malcolm Pirnie has earned a three-year average 2003-2005 Interstate Experience Modification Rate of .77.

Malcolm Pirnie has never been subject to a federal or state OSHA final order or a citation from the USEPA or USDOT.

Responsible Program Personnel

Malcolm Pirnie maintains a comprehensive Health & Safety Program in accordance with OSHA 29 CFR 1910 and USDOT 49 CFR. The program is administered by Mr. Mark McGowan, CSP, CIH, who has 25 years experience in comprehensive safety and industrial hygiene practice, including 12 years of managing the health and safety aspects of hazardous waste studies and remediation projects. In addition to Mr. McGowan, the Health & Safety Department consists of the following professionals:

Mr. Joseph Golden, Senior Health & Safety Trainer, , CET, EMT who has over 14 years' health and safety training including 7 years experience conducting training under contract to the USEPA. Mr. Golden currently works with the Red Oak Consulting Group performing Risk Assessments and Vulnerability Studies.

CORPORATE HEALTH & SAFETY PROGRAM

Ms. Jane Weber, Senior Health & Safety Specialist for the FIER group, who has over 19 years experience in the health & safety field. Ms. Weber is responsible for OSHA compliance and indoor air quality practice. She has experience in anticipating, evaluating, and recommending the control of hazards for federal, state, municipal, industrial, construction, and commercial clients. Her experience also includes air and noise exposure monitoring, health and safety plan development, regulatory compliance program development, loss control surveys, and employee and environmental health and safety (EH&S) training. In addition, Ms. Weber has developed Spill Prevention, Control and Countermeasure (SPCC) plans and contingency plans, as well as designed and managed indoor air quality projects, mold surveys and remediation, and other EH&S management solutions.

Ms. Laura Lee-Casey, Senior Health & Safety Specialist for the Construction Management group, who has 15 years experience in the safety field with 20+ years experience in training. Ms Lee-Casey comes from a heavy highway and site work contractor in Connecticut where she was the Safety Director and Risk Manager. She also worked for an environmental remediation company. Ms. Lee-Casey's specialty is in construction safety. She is a Construction Health and Safety Technician through the Board of Certified Safety Professionals. Laura is a Professional member of the ASSE and has been a Connecticut-licensed paramedic for 13 years.

Medical Monitoring Program

A Medical Monitoring Program addresses the effects of toxic chemicals or harmful physical agents on individual workers and verifies the effectiveness of environmental controls. Malcolm Pirnie, in compliance with Occupational Safety and Health Administration (OSHA) regulations, requires medical monitoring for workers exposed to asbestos, noise and lead, and for those who work on hazardous waste operations sites.

CORPORATE HEALTH & SAFETY PROGRAM

OSHA regulations further require that a physician evaluate employees to determine if they can wear a respirator.

Medical surveillance is offered to eligible employees who wear respirators or who are assigned to work on hazardous waste sites. The medical surveillance program is administered by the Board Certified Occupational Physicians at Qualisys Medical Network Services, Atlanta, GA.

Malcolm Pirnie's Medical Monitoring Program represents one aspect of the company's on-going commitment to provide a safe and healthful workplace, and to conduct its operations following applicable health and safety standards including those of the Federal Department of Labor/OSHA, the United States Environmental Protection Agency (USEPA), and state and local agencies.

Malcolm Pirnie Officers and Managers are responsible for staffing their projects with medically approved staff, e.g., staff members who are currently participating in the Medical Monitoring Program. Managers and Supervisors are also responsible for seeing that staff members reporting to them receive and maintain annual Health and Safety medical approvals.

Full-time, part-time, temporary and summer employees must participate in the Malcolm Pirnie Medical Monitoring Program if they meet the following criteria:

- Assigned to work on a hazardous waste site(s).
- Assigned to work on corrective actions taken at treatment, storage and disposal facilities regulated by 40 CFR (Code of Federal Regulations) Parts 264 and 265, the Resource Conservation and Recovery Act of 1976 (RCRA), or by other agencies under agreement with the USEPA.
- Potential exposure to chemical, biological or physical agents.

CORPORATE HEALTH & SAFETY PROGRAM

- Assigned to projects that may require the use of certain personal protective equipment e.g., respirators.
- Potential assignment to work on sites for which OSHA has issued regulations containing applicable medical monitoring provisions.
- Assigned to the Malcolm Pirnie Equipment Facility, Monsey, New York.
- Potential exposure to biological agents or infectious material as defined in the Bloodborne Pathogens Standard (29 CFR 1910.1030).

Training and Refresher Programs

Health and Safety Training provide employees with the knowledge, motivation and skills necessary to perform tasks in a way that protects them, the public, and property. The Occupational Health and Safety Administration (OSHA) requires specific health and safety training for workers exposed to lead, noise, asbestos, bloodborne pathogens and hazardous chemicals. Employees assigned to hazardous waste operations or those working in confined spaces, laboratories, or in proximity to electrical energy or other systems that could unexpectedly release stored energy also must receive training. Employees, who use personal protective equipment, including respirators and hearing protectors, also must be trained in the proper use and the limitations of this equipment.

Malcolm Pirnie's Health and Safety Training Program represents one aspect of the company's on-going commitment to provide its employees with a safe and healthful work place, and to conduct its operations following applicable federal, state and local health and safety standards, regulations and laws.

The objectives of the Health and Safety Training Program include:

- developing staff awareness of work place hazards encountered on the job;
- providing staff members with the knowledge and skills required to perform work tasks with the least risk to themselves and others;

CORPORATE HEALTH & SAFETY PROGRAM

- educating staff members on the purpose and limitations of safety and protective equipment; and
- training employees in ways to avoid or escape from threats to their personal well being.

OSHA required training is provided by experienced, competent vendors or by Malcolm Pirnie's in-house trainers. Malcolm Pirnie offers employees and clients 30 individual training courses required by OSHA, USDOT and USEPA including 8-hour HAZWOPER refresher and Supervisors training.

Malcolm Pirnie provides Health and Safety Training to eligible full-time, part-time, temporary and summer employees. Individual Health and Safety Training requirements vary according to an employee's work assignment(s) and job description. Malcolm Pirnie currently has 370 active employees who have successfully completed and are current with all requirements under OSH

EMERGENCY AND DECONTAMINATION PROCEDURES**Emergency Action Plan and Procedures**

Emergencies can and will occur, and when they do occur, site personnel must be prepared to respond to prevent or reduce the effect of the incident on employees, property, the general public and the environment. To accomplish this, a well-coordinated emergency management plan must be in place to ensure various interactive tasks necessary for containment or mitigation occur during events such as chemical releases, oil spills, fires, explosions and natural disasters.

Malcolm Pirnie prepares all emergency action plans to meet requirements of 29 CFR 1910.20 and 1910.38 of the OSHA regulations.

Malcolm Pirnie offers assistance in designing and/or evaluating emergency response

CORPORATE HEALTH & SAFETY PROGRAM

plans. In designing effective emergency plans and supporting material, Malcolm Pirnie can call upon an interdisciplinary team of scientists and engineers for skills in risk assessment, air dispersion modeling, process and mechanical engineering, toxicology, health and safety, and emergency response to work closely with Department staff, site owners, and outside agencies and resources in determining plan responsibilities and response operations.

Individual sections and annexes, or complete plans, can be prepared and integrated into existing risk management, loss prevention, or health and safety programs. In developing and writing the plans, Malcolm Pirnie utilizes USEPA's recommended integrated contingency plan (ICP) format. The ICP minimizes duplication in the preparation and use of emergency response plans for various regulatory requirements, and eliminates confusion for facility responders who often must decide which of their plans apply to a particular emergency. In addition, the ICP format improves economic efficiency as expenditures for preparation, maintenance, submission, and update of a single plan should be much lower than for multiple plans.

Decontamination Procedures

We utilize a decontamination procedure schedule as specified in the 4-agency document *OSHA Guidance Manual for Hazardous Waste Site Activities* published by NIOSH, OSHA, USCG and USEPA.

Site-Specific Health and Safety Information

Malcolm Pirnie routinely prepares Site Safety and Health Plans (SSHP) to address health and safety requirements for Malcolm Pirnie employees and subcontractors conducting site activities in compliance with OSHA 29 CFR 1910.120. This overall SSHP describes in detail the requirements and procedures for Malcolm Pirnie employee protection for the

CORPORATE HEALTH & SAFETY PROGRAM

various site tasks. Subcontractors are required to develop site-specific safety and health plans which, at a minimum, contain the provisions and restrictions set out in the general SSHP. In addition, subcontractor plans contain hazard evaluation and hazard control methods specific to their tasks on site. These plans, in combination with the general SSHP, are submitted to the client prior to commencement of site activities.

Safety, health and emergency response procedures are outlined for preventing accidents and protecting personnel from injury and occupational illness during site activities. Included in this SSHP are the assignment of responsibilities, personnel protection minimum requirements, safe work practices and emergency response procedures. The document is developed based upon available historical information and the assessment of potential physical and chemical hazards associated with the site and activities. A copy of this SSHP will be available on-site, in the keeping of the Malcolm Pirnie Site Safety Officer (SSO), during site activities. Compliance with this SSHP is required of all project personnel and visitors who enter the site.

The procedures outlined in the SSHP comply with the Occupational Safety and Health Administration (OSHA) requirements contained in 29 CFR 1910 including the final rule contained in 29 CFR 1910.120. The procedures are also consistent with the guidance contained in the Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities jointly prepared by the USEPA, National Institute for Occupational Safety and Health (NIOSH), OSHA, the U.S. Coast Guard (USCG) and USEPA's Standard Operating Safety Guides.

It is important to note every health and safety plan is a living document - it is modified as necessary as information becomes available.

1.0 Background Information

The scope of the services to be provided includes data collection for the purposes of contaminant delineation at OU-1 properties adjacent to the Cornell-Dubilier Site. The scope of services includes the following sampling programs:

- Shallow soil sampling
- Indoor dust sampling

2.0 Malcolm Pirnie Health & Safety Policy

Malcolm Pirnie is committed to providing a safe and healthful work place, free of recognized hazards, and to conduct its operations in accordance with applicable federal, state, and local environmental, health and safety standards, regulations and laws including those of the U. S. Department of Labor, Occupational Health and Safety Administration (OSHA), the U. S. Environmental Protection Agency (EPA), and U. S. Department of Transportation (DOT).

Malcolm Pirnie expects that all employees will plan and conduct their work activities in a responsible and safe manner that reflects this commitment to their personal well-being, that of our clients, and of the general public.

Malcolm Pirnie will provide appropriate safety equipment and training to employees to eliminate or reduce exposure to safety and health hazards.

Malcolm Pirnie staff will promptly report to the Manager of Corporate Health & Safety (914 641-2484) and the General Counsel (914 614-2950) all serious incidents, accidents, injuries and property damage that involve Malcolm Pirnie, the client, or contractor employees, which occur during the execution of their projects.

Failure to comply with Malcolm Pirnie's Health & Safety Policies, Procedures or Programs may result in disciplinary action, up to and including termination of employment.

3.0 Responsibilities and Lines of Authority

Project Officer

The Project Officer (PO) is ultimately responsible for project performance. The PO seeks and gets appropriate approvals for risk management decisions (e.g. from Regional/Practice Director(s), Legal Council, Corporate Health and Safety), and selects and effective and qualified project team. The PO supports the Project Manager or Deputy Project Manager with appropriate resources.

Project Manager

The Project Manager (PM) has the responsibility for executing the project in accordance with the scope of work and good engineering practice. The PM will supervise the allocation of resources and staff to implement specific aspects of this HASP and may delegate authority to expedite and facilitate any application of the program. The PM implements and executes an effective program of site-specific personnel protection and accident prevention. The Project Manager reports to the Project Officer.

Deputy Project Managers (DPM) are assigned all duties and responsibilities of the Site Safety Officer in his/her absence.

Corporate Health and Safety

Corporate Health and Safety is responsible for Malcolm Pirnie's overall Health and Safety Program and provides project guidance on air monitoring methodology, data interpretation and assistance in determining appropriate project engineering controls, work practices, and personal protective equipment. Corporate Health and Safety also reviews and approve HASPs.

Project Safety Officer

The Project Safety Officer (PSO) is responsible for interpreting and implementing the site health and safety provisions set out in this HASP, and will guide the efforts of field team personnel in their day-to-day compliance with this HASP. The PSO has the ability and authority to make necessary changes or additions to this HASP and provide technical assistance to field team personnel on problems relating to worksite safety. The PSO has the authority to correct safety-related deficiencies in materials or practice and to call a Project STOP in the most serious cases.

Alternate Project Safety Officer (APSO) is assigned all duties and responsibilities of the Site Safety Officer in his/her absence.

Public Information Officer

The Public Information Officer (PIO) is responsible for all public, press and other news media request for information, and is the only person authorized to provide such information

Site Record Keeper

The Site Record Keeper is responsible for the documentation of all related health and safety data documentation, including but not limited to metrological data, instrument calibration, accident and injury reports, and air monitoring data.

Field Team Leader

The Field Team Leader (FTL) is responsible for leading on-site activities of field team personnel, and to ensure field team personnel perform tasks according to the means and methods specified in the HASP.

Field Personnel

Field personnel have the following health and safety responsibilities:

- Implement the procedures set forth in the HASP;
- Take all reasonable precautions to prevent injury to themselves and their fellow employees; and
- Perform only those tasks that they believe they can do safely, and immediately report any accidents and/or unsafe conditions.

4.0 Subcontractors and Suppliers

Employers who become subcontractors and suppliers to Malcolm Pirnie during this Program will be selected, in part, on the basis of their previous Health & Safety performance record. These firms will have to submit as part of the bid package, information detailing their OSHA Recordable Accidents, Accidents Resulting in Lost Time, and their EMR for the past 4 years. This data will be reviewed by the Corporate Health & Safety Manager who will evaluate the data and make recommendations to the selection team.

Employers who become subcontractors and suppliers to Malcolm Pirnie during this Program will be responsible for the safety of their employees and second-tier subcontractors, if any, and will be responsible for the safety of the ENGINEER'S employees and the USACE employees while they are in areas controlled by that employer. Employers who become subcontractors and suppliers to Malcolm Pirnie during this Program and whose operations, tasks and hazards are substantially similar to those developed in Malcolm Pirnie's Task Safety Plan, may use Malcolm Pirnie's Plan under the following conditions.

Each Employer shall:

- Develop their own Health and Safety Program, including a written Hazard Communication Program and any other written hazard specific or safety programs required by federal, state and local laws and regulations, that addresses hazards and controls typically encountered in the subcontractor's line of work;
- Provide required personal protective equipment for their own employees and guests;
- Provide documentation that their employees have been health and safety trained in accordance with applicable federal, state and local laws and regulations;
- Provide evidence of required medical surveillance and medical approvals for their employees; and,
- Designate their own site safety officer responsible for ensuring that their employees comply with their own Health and Safety Program and taking any other additional measures required by their site activities.

Providing a copy of Malcolm Pirnie's Safety Plan to subcontractors or suppliers, does not establish, nor is it intended to establish a "joint employer" relationship between the Contractor and Malcolm Pirnie. This allowance does not establish, nor is it intended to

establish, a direct or indirect employer/employee relationship with subcontractor's employees.

Employers who become subcontractors and suppliers to Malcolm Pirnie during this Program and whose operations, tasks and hazards are substantially different from those developed in Malcolm Pirnie's Task Safety Plan, may not rely on Malcolm Pirnie's Safety Plan and must meet the following conditions:

- Develop their own Site Specific Health and Safety Program, including a written Hazard Communication Program and any other written hazard specific or safety programs required by federal, state and local laws and regulations.
- Develop their own Task Specific Safety Plan, in accordance with USACE EM 385-1-1, current edition, including the details of subcontractor tasks, potential or actual hazards identified as a result of a risk analysis of those tasks, and the engineering controls, work practices and personal protective equipment to be utilized to minimize or eliminate employee exposure to the hazard;
- Provide personal protective equipment for their own employees and guests;
- Provide documentation that their employees have been health and safety trained in accordance with applicable federal, state and local laws and regulations;
- Provide evidence of medical surveillance and medical approvals for their employees; and,
- Designate their own appropriately trained, site safety officer responsible for ensuring that their employees comply with their own Health and Safety Program and taking any other additional measures required by their site activities.

5.0 Training

Introduction

Health and Safety Training provides employees with the knowledge, motivation and skills necessary to perform tasks in a manner that protects them, the public, and property. The Occupational Health and Safety Administration (OSHA) requires specific health and safety training for workers exposed to lead, noise, asbestos, bloodborne pathogens and hazardous chemicals. Employees assigned to hazardous waste operations or those working in confined spaces, laboratories, or in proximity to electrical energy or other systems that could unexpectedly release stored energy also must receive training. Employees, who use personal protective equipment including respirators and hearing protectors, also must be trained in the proper use and the limitations of this equipment.

Malcolm Pirnie's Health and Safety Training Program represents one aspect of the company's on-going commitment to provide its employees with a safe and healthful work place, and to conduct its operations following applicable federal, state and local health and safety standards, regulations and laws. For further information on any aspect of Malcolm Pirnie's Health and Safety Training Program, contact the Manager of Corporate Health and Safety, WHI.

Objectives

The objectives of the Health and Safety Training Program include:

- Developing staff awareness of work place hazards encountered on the job;
- Providing staff members with the knowledge and skills required to perform work tasks with the least risk to themselves and others;
- Educating staff members on the purpose and limitations of safety and protective equipment; and,
- Training employees in ways to avoid or escape from threats to their personal well being.

Malcolm Pirnie provides Health and Safety Training to eligible full-time, part-time, temporary and summer employees. Individual Health and Safety Training requirements vary according to an employee's work assignment(s) and job description.

Health & Safety Training Responsibilities

The Manager of Corporate Health and Safety, WHI, is responsible for evaluating company-wide Health and Safety technical and regulatory compliance issues. This individual:

- Evaluates regulatory requirements and develops Health and Safety Training policies and procedures based on an analysis of work place exposures;
- Selects, reviews, and evaluates Health and Safety Training vendors for quality, cost, and consistency with established Health and Safety Training objectives; and,
- Coordinates the development and presentation of special training programs.
- The Training Administrator, Health and Safety, WHI, is responsible for maintaining training records and coordinating Health and Safety functions. This individual:
 - Reviews and updates the Health and Safety Training database;
 - Notifies Health and Safety Coordinators when training should be scheduled;
 - Assists in scheduling training sessions; and,
 - Issues quarterly Health and Safety Training Reports.

Most company locations have one or more designated Health and Safety Coordinators. These individuals are responsible for:

- Scheduling training required for Program participants;
- Providing project managers and supervisors with necessary training, medical and fit test documentation; and,
- Maintaining Health and Safety Training files for employees at their location.

Managers, supervisors and field team leaders are responsible for staffing their projects with appropriately trained staff. Managers and supervisors are also responsible for seeing that staff members reporting to them receive and maintain Health and Safety Training appropriate for their project assignments.

BASIC SAFETY AWARENESS TRAINING

During the first six months of employment, staff members must attend a Basic Safety Awareness presentation as part of new employee orientation. The components of this training include:

- An overview of Malcolm Pirnie's Health and Safety procedures and programs;
- Basic office safety, including office ergonomics; and,
- Hazard Communication Training.

Basic Safety Awareness presentations are provided by Corporate Health and Safety at least three times each year.

HAZARDOUS WASTE OPERATIONS TRAINING

OSHA regulations require that employees who meet the following criteria participate in a 40 hour Hazardous Waste Operations (HAZWOPER) Training:

- Employees assigned to work at a hazardous waste site(s);
- Employees assigned to work on corrective actions taken at treatment, storage and disposal facilities regulated by 40 CFR (Code of Federal Regulations) Parts 264 and 265, The Resource Conservation and Recovery Act of 1976 (RCRA), or by other agencies under agreement with United States Environmental Protection Agency (USEPA);
- Employees who, as part of their work responsibilities, may be exposed to chemicals, biological or physical agents, or use personal protective equipment or who may be assigned to work at sites for which OSHA has issued regulations containing applicable health and safety provisions; and,
- Employees scheduled to begin any project or task(s) for which Health and Safety Training is required.

If an employee is to be assigned tasks that include working in a containment ("hot") zone or wearing personal protective equipment at Level C or above, s/he is required to complete a minimum of 40-hours of initial off-site Hazardous Waste Operations instruction before starting the assignment. The content of this training normally includes:

- Chemical, physical and toxicological hazards of hazardous wastes.
- Site characterization, hazard detection and analysis.
- Site operation and control practices and procedures.
- Emergency preparedness.
- Personal protective equipment/work practices.
- Respiratory protection principles (workshop field exercise).
- Monitoring instruments/use, maintenance and calibration.
- Engineering controls and equipment.
- Medical monitoring/recognition of symptoms.
- Problem resolution/case studies.
- Decontamination procedures.

There is an eight hour Annual Refresher Training requirement for this training.

In addition to 40-hours of initial off-site instruction, employees will complete and document at least 24-hours of actual Hazardous Waste Operations field training under the direct supervision of a trained, experienced supervisor. This field training develops the

individual's ability to safely perform his/her assigned tasks at a specific level (A, B or C) of protection.

Exemption by Prior Experience or Training

New employees may request exemption from Hazardous Waste Operations Training if their previous work experience or training is equivalent to the initial training requirement described in 29 CFR 1910.120(e). Employees applying for a Hazardous Waste Training Exemption should contact the Training Administrator, Health and Safety, WHI, to receive a Health and Safety Equivalent Training Questionnaire form. The completed form should be sent to the Manager of Corporate Health and Safety, WHI, for review and approval. If approved, copies will be returned to the employee and the local Health and Safety Coordinator for inclusion in the employee's Health and Safety file.

Current employees interested in obtaining an exemption also must complete a Health and Safety Equivalent Training Questionnaire form and send it to the Manager of Corporate Health and Safety, WHI, for processing.

Hazardous Waste Operations Annual Refresher Training

Employees who want to remain available for Hazardous Waste assignments will update their 40-hour training by attending an eight-hour refresher course every 12 months. This training reinforces their initial training, and introduces new regulations, policies and procedures. Employees cannot be assigned hazardous waste site work until they satisfy this Annual Refresher Training requirement. Employees who have not taken Annual Refresher Training for more than two years after their due-date must repeat the 40-hour training course before being assigned Hazardous Waste Site Work.

Hazardous Waste Training for Site Managers, Field Team Leaders and Supervisors

Officers, Associates and other employees who function as site managers, field team leaders and supervisors must complete eight hours of Hazardous Waste Training for Supervisors. This training emphasizes informed decision-making in the field. Employees assigned to work as the only Malcolm Pirnie employee on a hazardous waste site must also complete this training. Instructors may be in-house, or qualified, approved training vendors. The content of this training normally includes:

- Health and Safety Planning.
- Hazard Review.
- Site Emergencies.
- Emergency Response Planning.
- Container Handling.
- Monitoring.

There is no Annual Refresher Training requirement for Hazardous Waste Training for Site Managers, Field Team Leaders and Supervisors.

CPR / FIRST AID / BBP TRAINING

Cardiopulmonary Resuscitation (CPR)/First Aid Training

This classroom training provides employees with the skills needed to respond to medical emergencies. OSHA requires that at least one person certified for CPR/First Aid be present on any site that is not immediately accessible (within four minutes) to healthcare services.

Site-active employees with 40-hour Hazardous Waste Operations training must maintain their CPR/First Aid Certification by taking a biannual CPR/First Aid Refresher course. Local Health and Safety Coordinators arrange CPR/First Aid training sessions through the American Heart Association or a similar qualified, approved training vendor.

Bloodborne Pathogens Exposure Control Training

Bloodborne Pathogens Exposure Control training is available as part of the CPR/First Aid training or as a separate course. Employees who are certified in CPR/First Aid are required to complete this training to comply with the applicable provisions of the OSHA Occupational Exposure to Bloodborne Pathogens Standard (29 CFR 1910.1030,) described in the Health & Safety manual. Employees who are not CPR/First Aid certified but who may be exposed to Bloodborne Pathogens during their assignments are also required to complete this training.

The content of Bloodborne Pathogens Exposure Control training normally includes:

- Introduction to the Bloodborne Pathogens Standard.
- Definitions.
- Bloodborne Diseases.
- Worksites with potential exposure.
- Universal Precautions.
- Malcolm Pirnie's Bloodborne Pathogens Exposure Control Program.
- What to do if an Exposure Incident occurs.

There is an Annual Refresher Training requirement for this training.

SPECIALIZED HEALTH & SAFETY TRAINING

Construction Safety Awareness Training

Presented by the Construction Management Group, WHI, this instruction provides employees with an awareness of health and safety hazards typically encountered on a construction site. Employees develop a general awareness of the OSHA Construction Industry regulations (29 CFR 1926) and learn the types, uses and limitations of safety equipment appropriate to a construction site.

Employees are required to complete this training if they work on or visit construction sites, hazardous waste sites, landfill closures, and similar sites where they may be exposed to construction hazards.

Confined Space Entry Training

Through specialized classroom and field instruction, employees will learn the proper procedures for entering sewers, tanks and other confined spaces. All Malcolm Pirnie employees who plan to work in or to supervise others working in confined spaces shall

complete Confined Space Entry Training before starting field activities. Contact your Supervisor or the Training Administrator, Health and Safety, WHI, for more information.

Hearing Conservation Training

Specialized classroom instruction on the dangers of noise, this course teaches employees about the proper equipment and procedures to use when working for prolonged periods in high noise (over 85 dBA) environments. OSHA requires this training in anticipation of exposure to high noise levels, and if an employee has been diagnosed as having an occupational hearing loss.

Lock-out / Tag-out Training

Specialized instruction informs employees on methods and procedures for recognizing and controlling sources of stored electrical, mechanical, hydraulic, pneumatic, chemical, thermal, and other energy that can cause injury if released. Malcolm Pirnie employees who conduct equipment or facility inspections should be familiar with lock-out/tag-out procedures.

Chemical Hygiene Training

Specialized instruction for employees working at process monitoring laboratories on Malcolm Pirnie projects. This training educates laboratory employees in methods and observations that may be used to detect the presence or release of a hazardous chemical(s), the physical and health hazards of chemicals in the work area, as well as measures employees can take to protect themselves from these hazards, including procedures Malcolm Pirnie implements to protect employees from exposure to hazardous chemicals.

Project-specific Hazard Communication Training

Specialized, project-specific instruction for employees assigned to a project that would require them to use or be exposed to hazardous chemicals. The instruction includes methods and observations for employees to detect the presence or release of a hazardous chemical(s), the physical and health hazards of chemicals in the work area plus measures employees can take to protect themselves from these hazards. Employees will be instructed in procedures Malcolm Pirnie implements to protect them from exposure to hazardous chemicals.

TRAINING - HEALTH & SAFETY FILES / RECORDS RETENTION

Health and Safety Coordinators will maintain current, accurate documentation in a file created for each Program Participant at their location. Depending on the training the Participant receives, the files should contain:

- Initial 40-Hour Training Certificates: to be retained permanently.
- Management/Supervisor Training Certificates: to be retained permanently.
- Documentation of Supervised Field Training: to be retained permanently.
- Health and Safety Training Questionnaires documenting equivalent training under 29 CFR 1910.120(e) and past Health and Safety-related Training: to be retained permanently.
- Documentation of "Other Training" including Asbestos, Hazard Communication, Confined Space Entry, Lockout/Tagout, Hearing Conservation or other specialized training programs: to be retained permanently.
- Documentation of Site-specific Training: to be retained permanently.
- 8-Hour Refresher Training Certificates: to be retained for three years from the date of training.
- CPR/First Aid Training Certificates: to be retained for three years from the date of training.
- Bloodborne Pathogen Exposure Control Training: to be retained for three years from the date of training.
- Respirator Fit Tests: to be retained for three years from the date of the Fit Test.

The Health and Safety file of each Program Participant is subject to audit by the Manager, Health and Safety, WHI, or designate.

When a Program Participant leaves the Health and Safety Program for any reason, including permanent reassignment to tasks not requiring participation in Annual Refresher Training, or resignation or termination of employment with Malcolm Pirnie,

Inc., his/her Health and Safety Coordinator forwards the employee's Health and Safety file to the Training Administrator, Health and Safety, WHI, for retention.

When an employee transfers within Malcolm Pirnie, Inc. the Health and Safety Coordinator forwards the employee's Health and Safety file to the Participant's new location and notifies the Training Administrator, Health and Safety, WHI.

Copies of Health and Safety Training records are available to Program Participant's or their authorized representative under the applicable provisions of the OSHA Standards (29 CFR 1910-1926).

6.0 Safety and Health Inspections

The Project Safety Officer is responsible for conducting periodic site inspections each day, attempting to complete corrective actions for hazards observed, and documenting those hazards not readily corrected. If the hazard is severe or an accident, incident, or near miss is likely to occur in the near future, the PSO has the authority to stop the work of Malcolm Pirnie employees as well as subcontractors and suppliers, until the issue can be resolved and the hazard abated.

It is the responsibility of the Project Manager to evaluate the findings of the PSO and to provide the resources to correct the situation. The Corporate Health & Safety Manager or designate, is available to assist as necessary.

The Corporate Health & Safety Manager or designate will visit the site at least twice each year during active operations to inspect the site, the conduct of the work. The Site Safety and Health Plans will be reviewed and recommendations for changes, improvements or revisions will be offered. Safety inspection reports will be reviewed and any outstanding hazard findings discussed with the Project Manager and the PSO.

7.0 Safety and Health Expectations, Incentive Programs, and Compliance

Malcolm Pirnie is committed to providing a safe and healthful work place, free of recognized hazards, and to conduct its operations in accordance with applicable federal, state, and local environmental, health and safety standards, regulations and laws including those of the U. S. Department of Labor, Occupational Health and Safety Administration (OSHA), the U. S. Environmental Protection Agency (EPA), and U. S. Department of Transportation (DOT).

Malcolm Pirnie expects that all employees will plan and conduct their work activities in a responsible and safe manner that reflects this commitment to their personal well-being, that of our clients, and of the general public.

Malcolm Pirnie provides appropriate safety equipment and training to employees to eliminate or reduce exposure to safety and health hazards.

Failure to comply with Malcolm Pirnie's Health & Safety Policies, Procedures or Programs may result in disciplinary action, up to and including termination of employment.

The purpose of this Disciplinary Program is to outline procedures Malcolm Pirnie may use to take disciplinary action against an employee or a group of employees for failure to comply with critical Health & Safety Policies, Procedures and Programs.

Information on the Disciplinary Program will be made available to all employees. Any questions regarding this Program are to be addressed to General Counsel or the Manager, Health & Safety, WHI.

RESPONSIBILITIES***Senior Management***

It is senior management's responsibility to actively and visibly support the Health & Safety Program and the annual Health & Safety performance goals, including any Disciplinary Action resulting from deviations from the requirements.

Project Management

Project Managers are responsible for knowing and implementing Health & Safety requirements on their projects. The Project Manager, during work site visits, is responsible for inspecting the project Health & Safety Plan implementation and making changes to Plans, Processes and Procedures as necessary to maintain compliance.

Project Safety Officers

The Project Safety Officer (PSO) is responsible for observing the work and implementing those portions of the Health & Safety Plan assign to them. They may receive first knowledge of project deviations and are expected to correct these issues on a local level, or failing that, raise the issue to a higher level as per the Process Document.

POLICY IMPLEMENTATION

The Project Manager is responsible for the environmental, health and safety compliance aspects of his or her projects. These compliance aspects include applicable federal, State and local laws and regulations and it includes policies, guidelines, procedures instituted by Malcolm Pirnie and its clients. It is the responsibility of the Project Manager to consult with appropriate internal resources and client contacts during the project planning phase and as the project progresses to obtain information and advice on the laws, regulations, policies and procedures that may be applicable to tasks anticipated during the project.

Copies of the project plan and project Health & Safety Plan are made available to project personnel for their use prior to being assigned to project tasks. Personnel who start at the beginning of the projects as well as those who join after should ask to see and read these documents before beginning project work.

Enforcement of this Disciplinary Policy is the responsibility of the Manager of Corporate Health & Safety, with appropriate guidance from General Counsel.

PROGRAM ADMINISTRATION

The Manager or Corporate Health and Safety, WHI, is responsible for maintaining the Disciplinary Program content and consulting General Counsel for guidance regarding disciplinary actions as appropriate. Each SBU Product Delivery Leader is responsible for seeing that the program is implemented in their areas of authority. Project Managers are responsible for identifying and investigating safety violations and following through with corrective actions.

DETERMINATION OF APPARENT VIOLATIONS

An apparent violation is defined as a failure to comply with requirements of applicable laws, regulations, policies or procedures. The failure to comply may arise out of an action, inaction, or a condition of the work area. Responsibility for a violation may be solely or jointly held, and may be assignable to employees, project management, or other responsible entities beyond the control of Malcolm Pirnie.

Identification of Violation

Anyone can allege an apparent violation. The individual who observes an unsafe or non-complaint action or behavior has an obligation to alert the offending party to the incident and suggest actions or behaviors more inline with applicable standards. If resolution is not obtained in this manner, the Project Safety Officer or the Project Manager should be notified and they may obtain guidance from the Manager of Corporate Health & Safety, WHI, and General Counsel.

When an incident or near-miss occurs in the office or on a project, the Project Manager, in consultation with the SBU Health and Safety Leader, will direct that the accident be documented on the appropriate forms as soon as possible but usually between 24 and 48 hours after being made aware of the incident.

The Manager of Corporate Health & Safety, WHI, will review each accident report and initiate a formal investigation at his discretion.

An apparent violation may also be identified by a Project Manager, PSO, a regulatory enforcement officer, or a Corporate Health & Safety inspector during an informal or periodic safety audit.

Communication of Violation

Upon discovery or notification of an apparent violation, the Project Manager will make every reasonable effort to attempt to mitigate and correct the problem at the earliest opportunity. After the completion of the corrective action, the Project Manager, the PSO or a member of Corporate Health & Safety will verbally review the incident and the corrective action with the responsible or affected employees. Project plans and project Health & Safety Plans will be amended as required to correct or improve procedures.

Disciplinary Action and Documentation

Employees determined to have knowingly committed apparent violations may be subject to disciplinary action on a case-by-case basis. The criterion for determining further disciplinary action may include but is not limited to the following:

- The severity and consequences of the breach;
- An evaluation of the circumstances surrounding the breach;
- The employee's level of knowledge about the specific issue; and,
- The employee's demonstrated willingness to follow the rules in the future.

Depending upon the circumstances uncovered above, repeated violations will usually be handled more severely than first-time incidents.

Disciplinary consequences may include but be not limited to attending refresher training, temporary suspension, and permanent removal from work site, or termination of employment.

If it is determined that during routine observations, incident/near-miss investigations, or compliance audits that the identified violations are the result of an overall lack of commitment to Malcolm Pirnie's EHS policies by the Project Manager or PSO, then disciplinary action may be taken against the employee and the responsible project management personnel as approved by the Manager of Corporate Health & Safety, WHI, with appropriate guidance from General Counsel.

TRAINING

Malcolm Pirnie will provide employees information about the Disciplinary Program via Intranet postings and other communication.

Initial Training

Prior to commencing work, each employee will be responsible for understanding the overall purpose of the project and the specific tasks and procedures need to meet the project objectives. In addition, employees will be mindful of the consequences of intentionally committing an apparent violation of Environmental, Health & Safety rules.

RECORDKEEPING

Disciplinary and Corrective Action Records

Human Resources will maintain file of any apparent violation actions against employees.

Training Records

Individual training certificates will be maintained in the local office Health and Safety files. The Manager, Health and Safety, WHI, will maintain a copy of all corporate exposure control training records. A summary record will be maintained by Health & Safety, COR, in the PeopleSoft database, and will be updated according to the schedule established in the Health and Safety Training section of this manual.

The training records maintained in the local office file will include the following information:

- The dates of the training sessions.
- The contents or a summary of the training sessions.
- The names and qualifications of persons conducting the training.
- The names and job titles of persons attending the training sessions.

Training records shall be maintained for three years from the date on which the training occurred. Upon request, employees will have access to any of his/her training records maintained by the local office, the Manager of Corporate Health and Safety, WHI.

8.0 Accident Reporting

INTRODUCTION

OSHA, in 29 CFR 1904, developed specific recording and reporting requirements, which comprise the framework of the current occupational safety and health recording system. The following sections present Malcolm Pirnie's policy on developing and administering occupational injury and illness records.

Malcolm Pirnie, and others in the architectural and engineering services business, is classified under SIC code 8700, or more exactly, 8711. OSHA, in 29 CFR 1904.16 of the regulations, states that:

- An employer whose establishment is classified in SIC's 52-89, (excluding 52-54, 70, 75, 76, and 80) need not comply, for such an establishment, with any of the requirements of this part except the following:
 - Obligation to report under Section 1904.8 concerning fatalities or multiple hospitalization accidents; and
 - Obligation to maintain a log of occupational injuries and illnesses under Section 1904.2 and make reports under Section 1904.21 upon being notified in writing by the Bureau of Labor Statistics that the employer has been selected to participate in a statistical survey of occupational injuries and illnesses.

Therefore, unless Malcolm Pirnie incurs an obligation under exception (a) or (b), the firm is exempted from compliance with the 29 CFR 1904 record keeping and reporting requirements.

In spite of this exception, it is the firm's policy to comply fully with the requirements of 29 CFR 1904 for the following reasons:

- There are 24 states and 2 territories where the firm may do business that have OSHA approved State Occupational Safety and Health Regulatory and Enforcement Programs. These Programs have the authority to develop and enforce their own regulations as long as they meet, at a minimum, the federal standards. Some states and territories have more stringent employer coverage requirements than federal OSHA, negating the firm's exemption in that state or territory.
- Many of our industrial and some of our municipal clients have vendor/contractor prequalification requirements that the firm must meet in order to be eligible to bid on projects or to enter onto and work at their facilities. Most of the prequalification statements require that the firm provide evidence of its good safety record as documented by the provisions of 29 CFR 1904.
- The firm is required by our Workers Compensation Insurance companies to provide documentation, equivalent to that required under 29 CFR 1904, of alleged occupational injuries and illnesses submitted for coverage under the firm's insurance policies.
- In most instances, when a regulatory compliance officer visits an office or project site, it is simpler to demonstrate compliance than to have to explain why the firm is exempted from compliance.

REPORTING OF FATALITY OR MULTIPLE HOSPITALIZATION INCIDENTS

Within 8 hours after the death of any employee from a work-related incident or the in-patient hospitalization of three or more employees as a result of a work-related incident, Malcolm Pirnie, through the General Counsel, will orally report the fatality/multiple hospitalization by telephone or in person to the Area Office of the Occupational Safety and Health Administration (OSHA), U.S. Department of Labor, that is nearest to the site of the incident, or by using the OSHA toll-free central telephone number. This requirement applies to each such fatality or hospitalization of three or more employees which occurs within thirty (30) days of an incident.

General Counsel will relate the following information:

- Company name.
- Location of incident.
- Time of the incident.
- Number of fatalities or hospitalized employees.
- Contact person with phone number.
- A brief description of the incident.

RECORDKEEPING***OSHA 300 Logs***

Each Malcolm Pirnie regional, branch, and project office will maintain, at each location, a log and summary of all recordable occupational injuries and illnesses for employees assigned, permanently or temporarily, to that location. Each recordable injury and illness will be entered on the log and summary as early as possible but no later than 5 working days after receiving information that a recordable injury or illness has occurred. For this purpose, the OSHA No. 300 form shall be used. The log and summary shall be completed in detail according to the instructions on the back of the form. Records shall be established on a calendar year basis.

Employees not in fixed establishments

An OSHA No. 300 log covering operations associated with a project office should be kept at the site. At the project manager's discretion, these records may be kept at the office of record if the following conditions are met:

- The required records are maintained in the office of record for each operation or group of operations, which is subject to common supervision (field superintendent, field supervisor, etc.).
- The address and telephone number of the office of record is available at the worksite.
- The office of record is staffed by someone during normal business hours that can provide information from the records maintained there by telephone and by mail.

Supplementary Records

Each office will maintain a copy of the Incident Investigation Report (Supervisor's Report) for each occupational injury or illness that has occurred in that office or on

projects for which the office is the office of record. The Supervisor's Report will be completed within 5 working days after receiving information that an incident has occurred. The Report shall be completed in the detail prescribed in the accompanying instructions.

Posting

Each Malcolm Pirnie regional, branch, project office and project site trailer will post an annual summary of occupational injuries and illnesses for that location. The OSHA No. 301 form for that office or project will be used to present the summary. If no injuries or illnesses occurred in the year, zeros must be entered on the totals line, and the form must be posted.

The summary shall be completed by February 1 of the year after the reporting year. The Manager of Corporate Health and Safety, WHI, supervises the preparation of the logs and summaries of occupational injuries and illnesses for each location and certifies that the annual summaries of occupational injuries and illnesses are true and complete. The summary covering the previous calendar year shall be posted no later than February 1, and shall remain in place until April 30.

For employees who do not primarily report or work at a single establishment, or who do not report to any fixed establishment on a regular basis, Malcolm Pirnie will present or mail a copy of the summary during the month of February of the following year to each such employee who receives pay during that month.

It is not necessary to post summaries at branch or project offices where operations have closed down during the calendar year.

Retention of records

Records including form OSHA Nos. 300, 301 and supplementary records will be retained in each office for 5 years following the end of the year to which they relate.

Access to records

Malcolm Pirnie will provide, upon request, occupational illness and injury records for inspection and copying by any representative of the Secretary of Labor for the purpose of carrying out the provisions of the act, and by representatives of the Secretary of Health and Human Services during any investigation, or by any representative of a State accorded jurisdiction for occupational safety and health inspections or for statistical compilation.

Malcolm Pirnie will provide, upon request, copies of the log and summary of all recordable occupational injuries and illnesses to any employee, former employee, and to their representatives for examination and copying in a reasonable manner and at reasonable times. The employee, former employee, and their representatives shall have access to the log for any establishment in which the employee is or has been employed.

DEFINITIONS

Recordable occupational injuries or illnesses are any occupational injuries or illnesses which result in:

- Fatalities, regardless of the time between the injury and death, or the length of the illness.
- Lost workday cases, other than fatalities, that result in lost workdays.
- Nonfatal cases without lost workdays, which result in transfer to another job or termination of employment, or require medical treatment (other than first aid) or involve: loss of consciousness or restriction of work or motion. This category also includes any diagnosed occupational illnesses, which are reported to the employer but are not classified as fatalities or lost workday cases.

"Medical treatment" includes treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even though provided by a physician or registered professional personnel.

"First Aid" is any one-time treatment, and any follow up visit for the purpose of observation, of minor scratches, cuts, burns, splinters, and so forth, which do not ordinarily require medical care. Such one-time treatment, and follow up visit for the purpose of observation, is considered first aid even though provided by a physician or registered professional personnel.

"Lost workdays" The number of days (consecutive or not) after, but not including, the day of injury or illness during which the employee would have worked but could not do so; that is, could not perform all or any part of his normal assignment during all or any part of the workday or shift, because of the occupational injury or illness.

9.0 Medical Support**INTRODUCTION**

A Medical Surveillance Program addresses the effects of toxic chemicals or harmful physical agents on individual workers and verifies the effectiveness of environmental controls. Malcolm Pirnie, in compliance with Occupational Safety and Health Administration (OSHA) regulations, requires Medical Surveillance for workers exposed to asbestos, noise and lead, and for those who work on hazardous waste operations sites. OSHA regulations further require that a physician evaluate employees to determine if they can wear a respirator.

Malcolm Pirnie's Medical Surveillance Program represents one aspect of the company's on-going commitment to provide a safe and healthful workplace, and to conduct its operations following applicable health and safety standards including those of the Federal Department of Labor/OSHA, the United States Environmental Protection Agency (USEPA), and state and local agencies. For further information on any aspect of Malcolm

Pirnie's Health and Safety or Medical Surveillance Programs, contact the Manager, Health and Safety, COR.

PROGRAM OBJECTIVES

The objectives of Malcolm Pirnie's Medical Surveillance Program include:

- Maintaining compliance with applicable workplace health and safety regulations.
- Determining prospective and current employees' general fitness to perform various or specific work assignments.
- Safeguarding the health and safety of employees assigned to work on hazardous waste sites and other sites that may involve exposure to chemical or physical agents.
- Establishing a health baseline for each participating employee, to be compared with subsequent medical evaluations.
- Determining the presence of discernible pre-existing medical conditions for which reasonable workplace accommodations and/or special personal protective equipment may be required.

The medical examinations and testing services provided under this Medical Surveillance Program are not substitutes for regular medical checkups and care recommended by a personal physician.

EMPLOYEE PARTICIPATION

For those projects that have regulatory requirements for medical surveillance, Malcolm Pirnie Project Managers, Supervisors, and Field Team Leaders are responsible for staffing their projects with medically approved staff e.g., staff members who are currently participating in the Medical Surveillance Program. Managers and Supervisors are also responsible for seeing that staff members reporting to them receive and maintain annual Health and Safety medical approvals.

Full-time, part-time, temporary and summer employees must participate in the Malcolm Pirnie Medical Surveillance Program if they or the project meet the following criteria:

- Assigned to work on a hazardous waste site(s).
- Assigned to work on corrective actions taken at treatment, storage and disposal facilities regulated by 40 CFR (Code of Federal Regulations) Parts 264 and 265, the Resource Conservation and Recovery Act of 1976 (RCRA), or by other agencies under agreement with the USEPA.
- Potential exposure to chemical, biological or physical agents.
- Assigned to projects that may require the use of certain personal protective equipment e.g., respirators.
- Potential assignment to work on sites for which OSHA has issued regulations containing applicable Medical Surveillance provisions.
- Assigned to the Malcolm Pirnie Equipment Facility, Monsey, New York.
- Potential exposure to biological agents or infectious material as defined in the Bloodborne Pathogens Standard (29 CFR 1910.1030) described in this manual.

- The client requires that only medically cleared employees work on their site.

CORPORATE MEDICAL CONSULTANT

The Corporate Medical Consultant, Qualisys Medical Network Services, Atlanta, Georgia, assists in determining the content and quality of the Medical Surveillance Program by:

- Developing the content of employee medical examinations.
- Developing medical and occupational history questionnaires.
- Locating, training and managing Regional Medical Clinics.
- Evaluating and reporting medical examination results.
- Maintaining confidential staff medical records.
- Serving Medical Review Officer as part of Malcolm Pirnie's Substance Abuse testing program.
- Providing other medical services as needed including follow-up examinations and special testing for chemical exposure, when appropriate.

REGIONAL MEDICAL CLINICS

Regional Medical Clinics serve one or more company locations and provide Medical Surveillance Program participants with examinations and other program services. Qualisys, in consultation with the Manager of Corporate Health and Safety, and the local Health and Safety Coordinator, selects one or more Regional Medical Clinics for the location. Malcolm Pirnie may request a change in clinic(s) supporting one or more of our sites if the clinic:

- Is more than a 30-minute drive from our site and a closer clinic can be located; or,
- Receives an aggregate of four documented incidents of unsatisfactory performance with any Qualisys client.

Unsatisfactory performance is defined as violations of good medical practice, inadequate clinic hygiene or unethical practices.

Malcolm Pirnie may request the addition of a clinic when:

- A new company location opens that is more than a 30-minute drive from an existing Regional Medical Clinic; or,
- A new field office opens, for six months or more, that is more than a 30-minute drive from an existing Regional Medical Clinic.

All questions and concerns regarding Regional Medical Clinics should be addressed to the Medical Surveillance Administrator, Health and Safety, COR.

TYPES OF EXAMINATIONS

Malcolm Pirnie and Qualisys have established four medical examinations to cover the majority of foreseen Medical Surveillance tasks. They are classified for: respiratory protection clearance, laboratory workers, and field engineers and scientists, generally

grades 1 to A. The actual examination chosen for staff members should relate to their job function and degree of field exposure.

Baseline Medical Examinations

After receiving a conditional offer of employment, candidates who meet the criteria described earlier in this section under "Employee Participation" must complete a Baseline Medical Examination.

Malcolm Pirnie staff members who, because of promotion, changed work assignment, or any other reason, meet the criteria described earlier in this section under "Employee Participation" must complete a Baseline Medical Examination. This examination establishes an employee's or candidate's general health and fitness for potential work assignments, develops baseline physiological data, and/or assesses their ability to wear personal protective equipment.

Annual / Periodic Examinations

Medical Surveillance Program participants complete an Annual Medical Examination to confirm their general health and fitness for current or upcoming assignments, and their ability to wear personal protective equipment. An employee's job classification, age, work history and other factors determine the format and content of the examination. The Corporate Medical Consultant compares the results of the annual examination against the values established by the Baseline or examination and notes significant changes for inclusion in the record. A two-year deferral is available for those employees whose field time is limited or their chemical and radiological exposures are minor.

Special Medical Examinations

More frequent medical examinations may be required if, for example, a program participant exhibits signs or symptoms of exposure to hazardous chemicals or physical hazards or has a medical or occupational history suggesting more frequent examinations. Employees may be potentially exposed to lead, PCBs, mercury, or arsenic on contaminated sites requiring periodic monitoring of body burden. Employees, not in the Hazardous Waste Medical Monitoring Program but who may be exposed to high levels of occupational noise, may be eligible for an annual or biannual audiometric testing.

A program participant also may request special Medical Examinations, the employee's Supervisor, or the Manager of Corporate Health and Safety, WHI. The Corporate Medical Consultant, in consultation with the Manager, Health and Safety, WHI, establishes the frequency and content of Special Medical Examinations.

The components of each of these Medical Examinations include a confidential medical and occupational history, comprehensive physical examination, and a series of medical tests. Copies of the examination protocols can be requested from the Manager of Corporate Health and Safety, WHI.

Exit Medical Examinations

Program participants who leave Malcolm Pirnie, receive permanent reassignment to tasks not requiring participation in the Medical Surveillance Program, or, for any other reason, no longer meet the criteria requiring participation in the Medical Surveillance Program must complete an Exit Medical Examination. The components of this examination are comparable to the Baseline Medical Examinations described earlier in this section.

Substituting a Previous Employer's Exit Medical Examination

Candidates for employment may be permitted, on a limited basis, to submit an Exit Medical Examination from their most recent employer in lieu of receiving a Malcolm Pirnie Baseline Medical Examination. The Corporate Medical Consultant may waive the examination requirement if the components of the candidate's Exit Medical Examination are substantially the same as the Malcolm Pirnie examination protocol, and if the candidate has not been on a site since taking the Exit Medical Examination.

Costs of Additional Medical Evaluations and Consultation

If, during a regularly scheduled examination, a medical condition is discovered that is not work-related and does not interfere with an employee's ability to perform the duties associated with their assignments, the employee may, at their own election, pursue further medical evaluation with their private physician. The employee will, however, be responsible for any costs associated with the follow-up consultations or treatment not covered by their medical plan.

REPORTING MEDICAL EXAMINATION RESULTS

The results of medical examinations received by candidates for employment and Medical Surveillance Program participants are reported according to generally accepted medical practice in the sequence described below:

- The candidate or participant completes the appropriate health questionnaire and brings it and a copy of the exam protocol to the Regional Medical Clinic.
- At the conclusion of Qualisys' evaluation, Qualisys communicates the detailed results of the examination to the candidate or employee in writing explaining any medical condition or findings Qualisys believes may require further evaluation or treatment. This may include any medical condition Qualisys believes will adversely influence the individual's employment.
- Qualisys advises the Manager of Corporate Health and Safety, WHI, in writing, that the candidate or employee has received a medical examination, is in suitable condition for fieldwork, and can wear personal protective equipment. The Medical Surveillance Administrator, Health and Safety, WHI, sends a copy to the candidate or employee's Health and Safety Coordinator for inclusion in the employee's Health and Safety file. Qualisys also sends a copy of the employee's audiometric test results to the Medical Surveillance Administrator, Health and Safety, WHI, for evaluation and filing.

Upon **written** request to Qualisys the candidate or employee's medical records can be sent to their personal physician within fifteen (15) days.

MEDICAL RESTRICTIONS

If the examination uncovers a medical condition that:

- Requires the employee to wear corrective lens for proper vision.
- Prevents an employee from safely using a negative pressure respirator or limits the time a respirator can be worn.
- Requires an employee to wear a hearing protector to prevent further deterioration of hearing ability in noisy environments.

Then these medical restrictions will be:

- Noted on the Medical Summary sent to Health and Safety, WHI.
- Noted on the Employee Medical Summary sent to the employee or candidate's home address.

The Manager, Health and Safety, WHI, may choose to discuss the extent of the restriction with the employee and the employee's immediate Supervisor, and develop reasonable accommodations that will allow the employee the greatest assignment flexibility possible.

Serious medical restrictions that could disqualify an employment candidate or restrict an employee's ability to be assigned to projects in the employee's SBU will be reported to the Director, Human Resources, COR, by the Manager of Corporate Health and Safety, WHI, for resolution.

PROGRAM COMMUNICATION

Qualisys distributes to the Medical Surveillance Administrator, Health and Safety, WHI, a monthly listing of medical examinations to be conducted over the next two months for program participants at their location. The Medical Surveillance Administrator, Health and Safety, WHI, distributes copies of Medical Summaries for program participants at their location to each Health and Safety Coordinator for scheduling.

RECORDS RETENTION

The Health and Safety files in each office are subject to audit by the Manager of Corporate Health and Safety, WHI, or designate. Health and Safety Coordinators shall maintain current, accurate documentation for each program participant at their location.

When a participant leaves the Health and Safety Program for any reason, including permanent reassignment to tasks not requiring participation in the Medical Surveillance Program, resignation or termination of employment with Malcolm Pirnie, Inc., the participant's Health and Safety Coordinator forwards his/her Health and Safety File to the Medical Surveillance Administrator, Health and Safety, WHI, for retention. For a transferred participant, the Health and Safety Coordinator forwards his/her Health and Safety file to the new location and notifies the Medical Surveillance Administrator, Health and Safety, WHI.

Unless directed otherwise by the Manager of Corporate Health and Safety, WHI, Qualisys maintains medical files for all active and inactive program participants for 40

years after termination from the Medical Surveillance Program. Copies of Medical Surveillance records are available to every participant or their authorized representative under the applicable provisions of the OSHA Standards (29 CFR 1910.20).

10.0 Personal Protective Equipment

INTRODUCTION

The purpose of this section is to assist employees in the proper selection and use of personal protective equipment (PPE). Malcolm Pirnie staff shall use PPE when engaged in activities where there is a potential for exposure to chemical, biological, physical or mechanical hazards, or as otherwise required by applicable laws and regulations.

The occupational use of PPE is governed by a series of standards promulgated by the Occupational Safety and Health Administration (OSHA) and found in Title 29 CFR 1910, Subpart I, *Personal Protective Equipment*. These include 29 CFR 1910.133, *Eye and Face Protection*; 29 CFR 1910.135, *Occupational Head Protection*; and, 29 CFR 1910.136, *Occupational Foot Protection*. PPE required by the OSHA *Respiratory Protection Standard*, 29 CFR 1910.134, and the *Noise Standard* including the *Hearing Conservation Amendment*, 29 CFR 1910.95, are addressed separately.

The OSHA standards dealing with personal protective equipment consist of three types of requirements. Section 1910.132 is a set of general requirements covering all types of equipment and all situations where it is needed. Section 1910.132 requirements do not cover section 1910.134, *Respiratory Protection*, or section 1910.137, *Electrical Protective Devices*, which are subjects of separate rule making. The other sections of Subpart I each give requirements for one particular type of equipment; and certain paragraphs in standards not primarily concerned with PPE call for protective equipment to be used under working conditions regulated by that section. In deciding on protective equipment for a project, project managers may find that provisions of all three apply.

OSHA does not recommend PPE if administrative or engineering controls will eliminate a hazard. Such controls are always preferred over reliance on personal protection to shield an employee from chemicals, processes or machinery known to be dangerous.

POLICY

A written hazard evaluation will be conducted for all Malcolm Pirnie worksites, **on all field projects**, other than work in office environments, to:

- Determine potential hazards to the health and safety of Malcolm Pirnie;
- Evaluate the need for and the feasibility of engineering and/or administrative controls of the hazards; and to,
- Specify effective types of personal protective equipment to reduce potential exposures.

Individual articles of a PPE ensemble will be chosen by a qualified employee, Project Safety Officer (PSO) or Corporate Health & Safety, to provide the best available protection against known or reasonably anticipated chemical and physical hazards. Individual articles of a PPE ensemble will be sized to fit the individual wearing it.

Compromised PPE will not be worn by Malcolm Pirnie employees or employees of Malcolm Pirnie subcontractors.

Contaminated PPE materials will be left at the work site if this can be done in an **environmentally responsible** manner.

RESPONSIBILITIES

OSHA requires that Malcolm Pirnie initiate engineering and work practice controls, to the extent feasible, to minimize the potential for employee exposure to chemical, biological, physical, or mechanical hazards. If recognized health and safety hazards cannot be practically removed from the work environment, and if employee exposures cannot be significantly reduced by administrative means, Malcolm Pirnie must provide employees with appropriate PPE and ensure that it is used properly.

Non-Hazardous Waste Projects

Project Managers

Project Managers are responsible for providing the project resources necessary to determine the appropriate level of PPE for employees working on their projects. To this end, Project Managers and/or PSOs will conduct a preliminary hazard assessment of the worksite and tasks to be performed and specify the appropriate PPE ensemble for each task and location. The Hazard Assessment Checklist, found in Appendix A, should be used to conduct the preliminary hazard assessment. Based upon the information generated in the assessment, and good safety practices, the Project Manager or the PSO can:

- Evaluate, design or purchase feasible engineering controls to isolate the hazard;
- Develop procedures and work practices to control the hazard; and,
- Evaluate and specify PPE required for the safe completion of the project.

Hazardous Waste Projects

For hazardous waste projects, a hazard analysis is conducted when developing a Task or Project Safety Plan (TSP-PSP) for field activities. The Safety Plan writer and reviewers evaluate the potential safety and health hazards posed by the project tasks. Then, in the Safety Plan, they specify levels of protection, the specific PPE in each level, and action level ranges that govern the selection of each level.

Any questions regarding hazard evaluations should be addressed to the SBU Health & Safety Leader or to the Manager of Corporate Health & Safety, WHI.

Qualified Employee

As a practical matter, the Project Manager is likely to delegate the task and hazard evaluation to a junior member of the project team who will often serve as the PSO.

Evaluating hazards and selecting appropriate engineering, work practice and PPE control methods for a project is an important responsibility. To promote the effective completion of this task, the Project Manager will delegate this task to an individual who meets certain education and training qualifications. Employees are considered qualified to select PPE if they meet either of these criteria:

- The employee has received formal training in industrial hygiene or safety practices; or,
- The employee has received training in the selection, use, maintenance and limitations of PPE (e.g., 40-Hour Hazardous Waste Operations, 10-hour Construction Site Safety training, or PPE Training), is familiar with the site, the tasks to be completed and the known or reasonably anticipated site and task hazards.

Project Safety Officer

The Project Safety Officer (PSO) on hazardous waste projects has the responsibility and authority to see that the provisions of the approved Plan are implemented during site activities. The person selected to be PSO must meet the minimum qualifications above.

At the site, the PSO evaluates air-monitoring data, work tasks and site conditions and then specifies a pre-approved level of protection PPE ensemble to be used by Malcolm Pirnie employees. If site conditions change, the PSO may only upgrade or downgrade the level of protection in accordance with the action levels and PPE ensembles specified in the approved Safety Plan. Modifications to the PPE ensembles, the task evaluations or the action levels as a result of unforeseen circumstances must be approved by the SBU Health & Safety Leader (HSL) and/or the Manager of Corporate Health & Safety, WHI.

Equipment Coordinators

The office Equipment Coordinator (E.C.) is responsible for procuring and dispensing expendable PPE for that office.

Employees

Employees are responsible for using the PPE in accordance with both the training they receive, and instructions provided. Employees should alert the PSO or team leader if proper PPE has not been assigned, if they have not been trained in the use and limitations of assigned PPE, and if the PPE is damaged, compromised, or does not appear to be working.

HAZARD ASSESSMENT

Malcolm Pirnie prepares written hazard assessments in order to identify the appropriate PPE ensemble(s) for project work activities. The PPE ensemble(s) for hazardous waste projects are specified in the PSP-TSP. A particular ensemble is chosen based upon:

- Proposed work tasks.
- Potential routes of entry and points of contact.
- Airborne contaminant action levels specified in the Safety Plan.

For projects that do not require a Safety Plan, the Preliminary Hazard Assessment form (Appendix A) is used to develop PPE requirements. The written Hazard Assessment form provides the certifier's name, signature, date(s), and identification of assessment documents. Contact the HSL or the Manager of Corporate Health & Safety, WHI for further assistance.

When new processes are implemented or when existing processes change, the PSO should be notified by the project staff so that the existing Hazard Assessment may be reviewed and updated as necessary.

PPE SELECTION

On projects defined by OSHA's *Hazardous Waste Operations and Emergency Response* standard (29 CFR 1910.120), and on other projects as determined by the hazard assessment, PPE ensembles (Levels of Protection) are selected based upon:

- The toxic materials, physical agents, or waste contaminants known to be present.
- Contaminant concentrations in the waste media.
- The toxicology and the probable routes of entry into the body exhibited by the contaminants.
- Known or expected airborne contaminant concentrations.
- Potential for exposure to physical agents (e.g., electrical, mechanical, hydraulic, pneumatic, chemical, thermal, nuclear, or non-ionizing radiation energy) based upon the type and strength of the energy source and the proximity of the employee to the source.

Individual articles of a PPE ensemble are chosen by a "qualified employee" (previously defined) to provide the best available protection against known or reasonably anticipated chemical and physical hazards. Multiple articles of PPE may be "layered" to provide multi-contaminant and full protection. The various elements of PPE will only protect a worker if the following conditions are met:

- The individual article of PPE must be effective against the hazard (see Appendix B).
- The individual article of PPE must be sized, fitted, worn and secured correctly.
- The functioning surface of the PPE must be intact and not compromised by holes, rips, tears, or split seams.
- The PPE ensemble (see Appendix C) chosen must be effective against all the hazards in the specific situation.

Non-specific action levels have been developed by the U.S. EPA and others as guidelines for determining respiratory and other PPE requirements when exposure air monitoring is conducted by non-specific response field instrumentation. Specific action levels may be used when a site is well characterized, the type and relative concentrations of air contaminants are well known, and appropriate field instrumentation is used to provide real-time exposure data. Malcolm Pirnie has adopted both sets of action levels. These can be found in Appendix C and in the current Malcolm Pirnie Short Form Site Safety Plan form. Airborne Contaminant Action Levels for Selection of PPE Ensembles is provided in Appendix D.

PPE USE

Individual articles of a PPE ensemble will be sized to fit the individual wearing it. To provide effective protection during removal and decontamination, PPE will be donned in the reverse order presented in the appropriate decontamination table. Duct tape will be used to seal overlaps between gloves /boots and the protective clothing, and to reinforce weak seams or tighten the waist of the garment. PPE will be cleaned and maintained in accordance with manufacturer specifications.

Fitting PPE

Proper fit of PPE is critical to providing adequate protection. Proper fit is also associated with comfort and comfort is essential if the employees are to wear the PPE provided. Malcolm Pirnie provides employees with a choice of PPE from several different vendors in a selection of sizes. In training, Malcolm Pirnie discusses and practices proper fitting, use and wear of the PPE.

OSHA believes fit is a critical factor in the overall effectiveness of PPE. PPE that fits poorly will not afford the necessary protection. PPE that is too small will bind and tear; PPE that is too large is harder to manage and can become tangled in equipment presenting additional hazards. Care should be taken to ensure the right size is selected. The user should be fit with the protective device and given instructions on care and use of the PPE. It is very important that employees be made aware of all warning labels for, and limitations of, their PPE.

Adjustment of the PPE should be made on an individual basis, with the goal of achieving a comfortable fit that will maintain the protective device in the proper position. Particular care should be taken in fitting devices for eye protection used against dust and chemical splashes, to ensure that the devices are sealed to the face. In addition, proper fitting of helmets is important to ensure that no helmet will fall off during work operations. When manufacturer's instructions are available, they should be followed carefully.

Damaged PPE

Compromised PPE will not be worn by Malcolm Pirnie employees. When a PPE wearer or their buddy notices that an article of PPE has been compromised, the two will quickly move to the decontamination/support zone to replace or repair the defective article(s).

Employee-Owned PPE

Malcolm Pirnie provides all required PPE at no or little cost to its employees. When employees plan to use personally owned PPE, the employee must present it to the PSO for inspection prior to use at the work site. If the PSO finds that the employee-owned PPE is adequate and has been properly maintained, the employee may use their personal PPE.

IN-USE PPE MONITORING

When wearing PPE at sites, Malcolm Pirnie personnel shall report any perceived problems or difficulties to the PSO. Likely concerns are:

- Perception of odors while wearing APR/SAR.
- Skin, eye, or nasal irritation.
- Unusual residues on PPE.
- Suspected degradation of PPE ensemble.
- Excessive discomfort or fatigue.
- Sudden increases in breathing resistance.
- Personal responses such as rapid pulse, nausea, and chest pain.

Should personnel experience any of these problems while wearing PPE, the PSO will temporarily shut down both Malcolm Pirnie and subcontractors operations on the site and all personnel will move to the support zone until the cause of the problem is identified and corrected.

PPE INSPECTION

PPE shall be inspected by employees before donning and periodically while in use. Protective clothing should be visually inspected before its use for imperfect seams, uneven coatings, tears, and malfunctioning closures. Gloves should be checked for pinholes by entrapping air in the glove, then rolling the cuff toward the fingers, or by inflating the glove and holding it under water. In either case, no air should escape. If a defect is observed in protective clothing or in gloves, the defective item should not be worn onsite. Clean defective apparel shall be disposed of in the trash. Contaminated defective apparel shall be left on-site in appropriate containers if possible.

During field activities, protective clothing should be periodically inspected by the employee and his/her assigned buddy for rips and punctures. Small rips or punctures observed in garments may be taped over, or the garment may be exchanged for a new one. Large rips or punctures require exchange.

PPE DECONTAMINATION

Any site where hazardous waste operations occur must have a written plan that outlines decontamination procedures (see 29 CFR 1910.120 [k]). Employees must be trained on these procedures and the decontamination line must be operational when anyone enters areas on-site where there is suspected contamination.

The Decontamination Plan

The written decontamination plan addresses:

- The number and placement of decontamination stations.
- Decontamination equipment and methods.
- Methods for disposing of clothing and equipment that may not be completely decontaminated.
- Methods of cleaning decon equipment and disposing of decon wastes.

The decontamination plan shall be based on the assumption that all equipment and personnel leaving the Exclusion Zone ("hot zone") will be grossly contaminated. A

personnel decontamination system will be established to wash and rinse (at least once) all reusable PPE worn in contaminated areas. This should be done in combination with a sequential doffing of protective equipment, starting at the first decontamination station with the most heavily contaminated item and progressing to the last decontamination station with the least contaminated article.

The decontamination plan developed should address the following factors:

Type of Contaminant

The extent of personnel decontamination is a function of the amount of the contaminant, its toxicity and its interaction with the PPE articles.

Amount of Contamination

Gross contamination increases the probability of personal contact or the degradation and permeation. Swipe tests may help determine the type and quantity of surface contaminants, or clear articles for disposal as non-hazardous trash.

Type and Level of PPE

Clothing variations and different levels of protection may require adding or deleting stations to the decontamination line.

Work Function

Those who are performing tasks that will not bring them into contact with contaminants may not need to have their garments washed and rinsed while others in the Exclusion Zone, with potential direct contact with the hazardous material, will require a more thorough decontamination.

Location of the Contamination

Contamination on the upper areas of protective clothing poses a greater risk to workers because volatile compounds may generate a hazardous breathing concentration for both the worker and the decontamination personnel. There is also an increased probability of skin contact when doffing the upper part of the clothing.

Decontamination Procedures and Equipment

Decontamination activities should be confined to a designed area within the Contamination Reduction Zone, known as the Contamination Reduction Corridor. The Corridor controls access into and out of the Exclusion Zone and confines contamination activities to a limited area. The size of the Corridor varies depending on the number of stations in the decontamination procedure, overall dimensions of the work control zones, and the amount of space available at the site. On smaller sites or sites with limited contamination potential, the size of the decontamination area and the number of decontamination stations will be severely reduced.

Within the Corridor, distinct areas should be set aside for decontamination of personnel, portable field equipment, discarded clothing, etc. Step-by-step procedures for decontamination of personnel wearing PPE Levels B and C are found in Appendix E at the end of this section.

PPE DISPOSAL

There are few reference guidelines for disposal of contaminated or used PPE garments. Sites requiring Decontamination Corridors will also be equipped to drum, bag, or otherwise dispose of large volumes of PPE wastes generated by site operations. On smaller sites such as well drilling and sampling, or soils sampling projects, field teams are required to bring an adequate supply of heavy gauge opaque plastic garbage bags to hold disposable PPE garments after use.

Contaminated PPE materials will be left at the work site if this can be done in an **environmentally responsible** manner. This activity **must** be negotiated with the client / owner / operator / subcontractor in advance of the fieldwork. If this cannot be done, decontaminate contaminated PPE, conduct a swipe test on a representative sample, and bring it back, in clean plastic bags, to the office. PPE that is used but "clean" or was contaminated but tests "clean" may be disposed of in the office dumpster. PPE that cannot be decontaminated or is contaminated by materials containing mercury, lead, solvents, petroleum, PCBs or dioxin will be disposed of as hazardous waste.

TRAINING

Malcolm Pirnie personnel provided with PPE shall be trained in its use, care, capabilities, and limitations prior to using it in a hazardous work environment. Personnel engaged in hazardous waste operations site activities shall receive the initial 40-hour training, of which PPE instruction is an integral part. Subsequent refresher training will include an annual review in the use, limitations, inspection, and care of PPE. A combined refresher/PPE certificate will be issued documenting this training.

Initial Training

Initial training is provided to all employees that are required to wear PPE. Employees receive initial training in the proper use and care of PPE prior to wearing the PPE in the work place. This training is most effective when the employee understands the hazards that are present, how the PPE provides protection, and the limitations of the PPE.

At a minimum, the training portion of the PPE program should delineate the user's responsibilities utilizing both classroom and hands-on training when necessary to explain the following:

- When PPE is necessary to be worn.
- What PPE is necessary and the selection criteria used for this determination.
- The operation of the selected PPE, including capabilities and limitations.
- The nature of the hazards and the consequences of not using the PPE.
- The human factors influencing PPE performance.
- Instruction in inspecting, donning, doffing, checking, fitting, and using PPE.
- The user's responsibility for decontamination, cleaning, maintenance and repair of PPE.

- Limitations of the PPE.
- Useful life and disposal of the PPE.
- How to recognize emergencies.
- Emergency procedures and self-rescue in the event of PPE failure.
- The buddy system.
- Emergency action planning, and the user's responsibilities and duties in an emergency.

Employees are required to demonstrate their understanding in each of the subject areas listed above. Special emphasis should be placed on proper wear, fit, and limitations of the PPE. If the employee cannot demonstrate a full understanding of the material provided in the training, that employee shall be retrained and must exhibit complete understanding of the material presented before they are allowed to wear the PPE in the work place.

Additional Training

Refresher training is provided when an employee cannot demonstrate a good understanding of the five required OSHA training topics (see above). Employees that are observed using PPE improperly are retrained.

Additional training is provided whenever processes change and new hazards require the use of additional or different PPE.

Staff provided with ancillary PPE (e.g., safety belts, floatation gear) should be trained in its use and care by the PSO before actual use onsite.

Staff requesting PPE who are not in the hazardous waste Health and Safety Training Program and have not received PPE training should be trained in the use and care of the PPE by their PSO before actual use onsite. The PSO will provide the Administrator, Health and Safety, WHI, with an attendance list and a brief summary of the training material covered to document the training and to issue certificates.

Since PPE use often causes discomfort and inconvenience, there is a natural resistance towards wearing it conscientiously. The major thrust of training must be to make the user aware of the need for PPE and to instill the motivation to properly wear and maintain the necessary PPE.

RECORDKEEPING

PPE training should be documented in the site health and safety logbook. The Manager of Corporate Health and Safety, WHI, will maintain a copy of all corporate PPE training records. A summary record will be maintained by Health and Safety, WHI, in the PeopleSoft database, and will be updated according to the schedule established in the Health and Safety Training section of this manual.

The training records maintained in the local office file will include the following information:

- The dates of the training sessions.
- The contents or a summary of the training sessions.
- The names and qualifications of persons conducting the training.
- The names and job titles of persons attending the training sessions.

Training records shall be maintained for three years from the date on which the training occurred. Upon request, employees will have access to any of his/her training records maintained by the local office, the Manager of Corporate Health and Safety, WHI.

11.0 Plans, Programs and Procedures

Plans, Programs and Procedures specific to the Program, the Site and the Task will be modified from our standard Health & Safety Program documents and included in the Task Specific Safety Plan.

12.0 Contractor Information

Malcolm Pirnie and its subcontractors and suppliers will develop and implement the Plans, Programs and Procedures necessary to protect employees, the USACE personnel and the general public. The primary reference for the documents will be the appropriate manual sections of EM 385-1-1, 3 Nov 03.

13.0 Site Specific Hazards and Controls

As previously detailed in Section 4 of this Accident Prevention Plan, Malcolm Pirnie and each of its subcontractors and suppliers will develop Task Safety Plans in accordance with EM 385-1-1, 3 Nov 03. These plans will include a Task/Hazard evaluation section detailing site-specific hazards and controls for each activity of the operation.

Appendix B
Malcolm Pirnie, Inc. Safety Statistics (2000-2006)

Summary of Malcolm Pirnie, Inc. Safety Statistics

Year	2000	2001	2002	2003	2004	2005	2006
EMR	0.89	0.88	0.81	.79	0.77	.74	.72
Number of Recordable Incidents	10	8	6	10	8*	13*	11
Number of Lost Work Days	32	36.5	0	7.5	17	18	1

OSHA's Form 300A

Summary of Work-Related Injuries and Illnesses

Year 2006

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

All establishments covered by Part 1904 must complete this Summary page, even if no injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete.

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees, former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
<u>0</u>	<u>1</u>	<u>0</u>	<u>10</u>
(G)	(H)	(I)	(J)

Number of Days

Total number of days of job transfer or restriction	Total number of days away from work
<u>0</u>	<u>1</u>
(K)	(L)

Injury and Illness Types

Total number of...	
(M)	
(1) Injury	<u>10</u>
(2) Skin Disorder	<u>1</u>
(3) Respiratory Condition	<u>0</u>
(4) Poisoning	<u>0</u>
(5) Hearing Loss	<u>0</u>
(6) All Other Illnesses	<u>0</u>

Post this Summary page from February 1 to April 30 of the year following the year covered by the form.

OMB approved number for this information collection is estimated to average 10 minutes per response, including time to review the instructions, search and existing data sources, gather and maintain the data needed, review and approve the final data, and complete and review the collection of information unless it is a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave. NW, Washington, DC 20210. Do not send the completed forms to this office.

Establishment information

Your establishment name Malcolm Pirnie, Inc.

Street 104 Corporate Park Drive

City White Plains State NY Zip 10602

Industry description (e.g., Manufacture of motor truck trailers)

North American Industry Classification System (NAICS)

5 4 1 6

Employment information

Annual average number of employees 1700

Total hours worked by all employees last year 3,771,927

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

[Signature] Company executive

[Signature] Vice President

914-694-2100 Phone

1/25/2007 Date

OSHA's Form 300A

Summary of Work-Related Injuries and Illnesses

Year 2005



U.S. Department of Labor
Occupational Safety and Health Administration
Form approved OMB no. 1218-0176

All establishments covered by Part 1904 must complete this Summary page, even if no injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete.

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees, former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
<u>0</u> (G)	<u>6</u> (H)	<u>1*</u> (same case inc. in H) (I)	<u>11</u> (J)

Number of Days

Total number of days of job transfer or restriction	Total number of days away from work
<u>15</u> (K)	<u>18</u> (L)

Injury and Illness Types

Total number of...
(M)

(1) Injury	<u>13</u>	(4) Poisoning	<u>0</u>
(2) Skin Disorder	<u>0</u>	(5) Hearing Loss	<u>2</u>
(3) Respiratory Condition	<u>0</u>	(6) All Other Illnesses	<u>2</u>

Post this Summary page from February 1 to April 30 of the year following the year covered by the form

Public reporting burden for this collection of information is estimated to average 50 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3544, 200 Constitution Ave. NW, Washington, DC 20210. Do not send the completed forms to this office.

Establishment information

Your establishment name Malcolm Pirnie, Inc.
Street 104 Corporate Park Drive
City White Plains State NY Zip 10602
Industry description (e.g., Manufacture of motor truck trailers)

Standard Industrial Classification (SIC), if known (e.g., SIC 3715)
8 7 1 1

Employment information

Annual average number of employees 1785
Total hours worked by all employees last year 3251772

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

Mark A. McGowan, Associate
Company executive
Mgr. Health & Safety
Title

914-291-2484
Phone
1/20/2006
Date

OSHA's Form 300A

Summary of Work-Related Injuries and Illnesses

Year 2004



U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0175

All establishments covered by Part 1904 must complete this Summary page, even if no injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete.

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees, former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

Total number of cases	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
<u>0</u>	<u>1</u>	<u>2</u>	<u>6</u>
(G)	(H)	(I)	(J)

Total number of days of job transfer or restriction	Total number of days away from work
<u>22</u>	<u>17</u>
(K)	(L)

Total number of...	
(M)	
1) Injury	<u>7</u>
2) Skin Disorder	<u>1</u>
3) Respiratory Condition	<u>0</u>
4) Poisoning	<u>0</u>
5) Hearing Loss	<u>0</u>
6) All Other illnesses	<u>0</u>

Post this Summary page from February 1 to April 30 of the year following the year covered by the form

Public reporting burden for this collection of information is estimated to average 50 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave. NW, Washington, DC 20210. Do not send the completed forms to this office.

Establishment Information

Your establishment name MALCOLM PIRNIE, INC.

Street 104 CORPORATE PARK DR.

City WHITE PLAINS State NY Zip 10602

Industry description (e.g., Manufacture of motor truck trailers)
Consulting Engineering

Standard Industrial Classification (SIC), if known (e.g., SIC 3715)
8 7 1 1

Employment Information

Annual average number of employees 1,508

Total hours worked by all employees last year 2,915,417

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

<u>[Signature]</u>	<u>Mgr., Health & Safety</u>
Company executive	Title
<u>914-541-2484</u>	<u>1/15/2005</u>
Phone	Date

OSHA's Form 300A

Summary of Work-Related Injuries and Illnesses

Year 2003



U.S. Department of Labor
Occupational Safety and Health Administration
Form approved OMB no. 1218-0175

All establishments covered by Part 1904 must complete this Summary page, even if no injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete.

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees, former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
<u>0</u> (G)	<u>3</u> (H)	<u>1</u> (I)	<u>5</u> (J)

Number of Days

Total number of days of job transfer or restriction	Total number of days away from work
<u>8.5</u> (K)	<u>3</u> (L)

Injury and Illness Types

Total number of...
(M)

(1) Injury	<u>5</u>	(4) Poisoning	<u>0</u>
(2) Skin Disorder	<u>0</u>	(5) Hearing Loss	<u>0</u>
(3) Respiratory Condition	<u>0</u>	(6) All Other Illnesses	<u>4</u>

Post this Summary page from February 1 to April 30 of the year following the year covered by the form.

Public reporting burden for this collection of information is estimated to average 50 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave. NW, Washington, DC 20210. Do not send the completed forms to this office.

Establishment Information

Your establishment name Malcolm Pirnie, Inc.
Street 104 Corporate Park Dr.
City White Plains State NY Zip 10602
Industry description (e.g., Manufacture of motor truck trailers)
Consulting Engineering
Standard Industrial Classification (SIC), if known (e.g., SIC 3715)
8 7 1 1

Employment Information

Annual average number of employees 1398
Total hours worked by all employees last year 2,908,716

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

[Signature]
Company executive

Mr. H&S
Title

914-641-2484

Phone

1/14/2004

Date

OSHA's Form 300A Summary of Work-Related Injuries and Illnesses

Year 2002



U.S. Department of Labor
Occupational Safety and Health
Administration

Form approved OMB no. 1218-0170

All establishments covered by Part 1904 must complete this Summary page, even if no injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete.

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees, former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
<u>0</u>	<u>0</u>	<u>1</u>	<u>8</u>
(G)	(H)	(I)	(J)

Number of Days

Total number of days of job transfer or restriction	Total number of days away from work
<u>2</u>	<u>0</u>
(K)	(L)

Injury and Illness Types

Total number of...

(M)	
(1) Injury	<u>5</u>
(2) Skin Disorder	<u>2</u>
(3) Respiratory Condition	<u>0</u>
(4) Poisoning	<u>0</u>
(5) All other illnesses	<u>0</u>

Post this Summary page from February 1 to April 30 of the year following the year covered by the form.

Public reporting burden for this collection of information is estimated to average 50 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave, NW, Washington, DC 20210. Do not send the completed forms to this office.

Establishment Information

Your establishment name Melco Pitts, Inc.
Street _____
City _____ State _____ Zip _____
Industry description (e.g., Manufacture of motor truck trailers)
Consulting Engineering
Standard Industrial Classification (SIC), if known (e.g., SIC 3716)
8 7 1 1

Employment Information

Annual average number of employees 1305
Total hours worked by all employees last year 2,852,872

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

[Signature]
Company executive

Associate
Title

914 694 2100
Phone

9/28/04
Date

Appendix C:
Health and Safety Checklists

HEALTH AND SAFETY QC CHECKLIST PREPARATION FOR FIELD ACTIVITIES

The following should be completed prior to initiating fieldwork:

- ☐ Notify local EMS of fieldwork
 - ☐ Date called/individual spoken to: _____
- ☐ Confirm that all field personnel are familiar with the contents of the Site Health and Safety Plan
- ☐ Approximate hospital route copied and ready for placement in field vehicles
- ☐ Colored maps of the area ready for placement in field vehicles
- ☐ Compile current personnel training certificates
 - ☐ First Aid (2 team members)
 - ☐ 8-Hour Refresher (all team members)
 - ☐ Site Supervisor Training (at least one team member)
 - ☐ Other _____
 - ☐ Other _____
- ☐ Current certifications checked for deficiencies
 - ☐ Deficiencies observed _____
- ☐ Compile medical surveillance records
- ☐ Fit test current?
 - ☐ Yes
 - ☐ No _____
- ☐ PPE and health and safety equipment and supplies have been ordered
 - ☐ First aid kit
 - ☐ Fire extinguisher
 - ☐ Eye wash
 - ☐ Nitrile gloves
 - ☐ Dust masks (for optional use)
 - ☐ Tyvek booties
 - ☐ Full tyvek suits (for optional use during soil sampling)

HEALTH AND SAFETY QC CHECKLIST PREPARATION FOR FIELD ACTIVITIES

- ☐ PPE and health and safety equipment and supplies have been delivered
 - ☐ First aid kit
 - ☐ Fire extinguisher
 - ☐ Eye wash
 - ☐ Nitrile gloves
 - ☐ Dust masks (for optional use)
 - ☐ Tyvek booties
 - ☐ Full tyvek suits (for optional use during soil sampling)

HEALTH AND SAFETY QC CHECKLIST KICKOFF AUDIT

- ☐ PPE and health and safety equipment and supplies have been delivered and are ready for transport to the site
 - ☐ First aid kit
 - ☐ Fire extinguisher
 - ☐ Eye wash
 - ☐ Nitrile gloves
 - ☐ Dust masks (for optional use)
 - ☐ Tyvek booties
 - ☐ Full tyvek suits (for optional use during soil sampling)
- ☐ Health and safety equipment is up-to-date and in working order
 - ☐ First aid kit
 - ☐ Fire extinguisher
 - ☐ Eye wash
- ☐ Approximate hospital route placed in field vehicles
- ☐ Colored maps of the area placed in field vehicles
- ☐ Current personnel training certificates on file
- ☐ Medical surveillance records on file
- ☐ Fit test records on file
- ☐ Site Safety and Health Plan placed in field vehicles

Appendix D
Documentation of Site-Specific Training

APPENDIX D. DOCUMENTATION OF SITE SPECIFIC TRAINING

HAZWOPER TRAINING				OTHER TRAINING				
NAME	INITIAL (DATE)	8HR (DATE)	MGR (DATE)	DOT (DATE)	CSE (DATE)	CPR/First Aid / BBP (Exp. DATE)	MEDICAL (DATE)	FIT TEST MAKE / SIZE / TYPE (DATE)
Dudek, Edward	11/88	01/06	11/88			02-00/02-00/08-01	11/04	3M/SML/FF 01/96
McCann, Jim	12/04	07/04	09/95				10/04	MSA/LG/FF 01/05
Zamek, Erika	8/02	9/07					12/07	
<ul style="list-style-type: none"> Note: Please note that CPR/FA/BBP are expiration dates Training/fit testing will be updated prior to the commencement of field activities. Other team members will be added to this table when the sampling team is selected. 								

Appendix E
Tailgate Safety Meeting Checklist

APPENDIX E. SITE SAFETY TAILGATE MEETING

PROJECT NAME:		CLIENT NAME:	
PROJECT NUMBER:		PROJECT LEADER:	
PREPARED BY:		DATE:	
ON-SITE SAFETY MEETING RECORD			
Location:			
Task to be Performed:			
I. Purpose for meeting: (check all that apply)			
<input type="checkbox"/>	Daily Safety Briefing		
<input type="checkbox"/>	Begin New Task. Task:		
<input type="checkbox"/>	Periodic Safety Meeting		
<input type="checkbox"/>	New Site Procedures		
<input type="checkbox"/>	New Site Conditions / Information		
<input type="checkbox"/>	New Site Workers		
Meeting Attendees:			
Name (Print)		Signature	Company
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			

APPENDIX E. SITE SAFETY TAILGATE MEETING

II. Topic (check all that apply)			
<input type="checkbox"/>	Site Safety Personnel	<input type="checkbox"/>	Decontamination
<input type="checkbox"/>	Work Area Description	<input type="checkbox"/>	Emergency Response
<input type="checkbox"/>	Site characterization	<input type="checkbox"/>	Hazard Communication
<input type="checkbox"/>	Equipment Hazard(s)	<input type="checkbox"/>	On-site Emergency
<input type="checkbox"/>	Biological Hazard(s)	<input type="checkbox"/>	On-site Injuries
<input type="checkbox"/>	Chemical Hazard(s)	<input type="checkbox"/>	Evacuation Procedures
<input type="checkbox"/>	Physical Hazard(s)	<input type="checkbox"/>	Rally Point
<input type="checkbox"/>	Heat Stress	<input type="checkbox"/>	Emergency Communications
<input type="checkbox"/>	Cold Stress	<input type="checkbox"/>	Directions to Hospital
<input type="checkbox"/>	Site Control	<input type="checkbox"/>	Emergency Equipment
<input type="checkbox"/>	Work and Support Zones	<input type="checkbox"/>	Drug and Alcohol Policies
<input type="checkbox"/>	PPE	<input type="checkbox"/>	Medical Monitoring
<input type="checkbox"/>	Air Monitoring	<input type="checkbox"/>	Task Training
<input type="checkbox"/>	Safe Work Practices	<input type="checkbox"/>	Unexploded Ordnance (UXO)
III. Remarks			
V. Verification			
I certify that the personnel listed on this roster received the briefing described above. Site personnel not attending this meeting will be briefed before beginning their assigned duties.			
_____ Site Safety Representative		_____ Date	

Appendix F
Malcolm Pirnie, Inc. Corporate Hearing Conservation Program

**APPENDIX F. CORPORATE
HEARING CONSERVATION PROGRAM**

TABLE OF CONTENTS

	<u>PAGE</u>
INTRODUCTION	1
1. REFERENCES	1
2. POLICY.....	1
3. RESPONSIBILITIES.....	2
3.1. CORPORATE HEALTH & SAFETY MANAGER	2
3.2. PROJECT MANAGERS	2
3.3. EQUIPMENT FACILITY MANAGER	2
3.4. PROJECT STAFF.....	2
4. DEFINITIONS.....	3
4.1. ACTION LEVEL	3
4.2. BASELINE AUDIOGRAM.....	3
4.3. DB (DECIBEL).....	3
4.4. HAZARDOUS NOISE	3
4.5. NOISE DOSE.....	3
4.6. NRR (NOISE REDUCTION RATING).....	3
4.7. PERMISSIBLE EXPOSURE LIMIT	3
5. NOISE HAZARDS	3
6. NOISE EVALUATION.....	4
6.1. NOISE MEASUREMENTS AND EXPOSURE ASSESSMENTS.....	5
6.2. AREA MEASUREMENTS	5
6.3. PERSONAL MONITORING	5
6.4. RE-MONITORING OF HAZARDOUS NOISE AREAS	6
7. NOISE EXPOSURE LIMITS.....	6
7.1. EIGHT-HOUR, TIME-WEIGHTED AVERAGE (8-HOUR TWA) EXPOSURE LIMITS.....	6
7.2. ULTRASOUND EXPOSURE LIMITS.....	7
7.3. PERMISSIBLE SPEECH INTERFERENCE LEVEL.....	7
7.4. NUISANCE NOISE.....	7
8. ENGINEERING AND ADMINISTRATIVE CONTROLS.....	8
8.1. ENGINEERING CONTROLS.....	8
8.2. ADMINISTRATIVE CONTROLS	8
8.2.1. <i>Measuring Noise</i>	8
8.2.2. <i>Modifying Work Schedules</i>	8
8.2.3. <i>Posting Signs / Labels</i>	8
9. HEARING PROTECTION DEVICES.....	9
9.1. MAINTENANCE OF HEARING PROTECTIVE DEVICES.....	9
9.2. HEARING PROTECTION PERFORMANCE INFORMATION.....	9
10. TRAINING (ITEM 1).....	10

11.	MEDICAL SURVEILLANCE (ITEM 4)	10
11.1.	BASELINE AUDIOGRAMS	10
11.2.	FOLLOW-UP AUDIOGRAMS	11
12.	RECORDKEEPING	11
12.1.	EXPOSURE MONITORING RECORDS	11
12.2.	TRAINING RECORDS	11
12.3.	AVAILABILITY OF RECORDS	12
12.4.	TRANSFER OF RECORDS	12

APPENDIX F. CORPORATE HEARING CONSERVATION PROGRAM

INTRODUCTION

Noise is the perception of pressure waves in the air caused by a vibrating source. The ears transduce this mechanical energy to electrochemical impulses that are transmitted to the brain, resulting in the perception of sound. Noise is unwanted sound. This Hearing Conservation Program sets forth requirements for reducing noise and protecting employees who may be exposed to excessive noise levels.

These requirements are based on the Occupational Safety and Health Administration Hearing Conservation Program described in 29 CFR 1910.95. The standards for noise that disrupts speech communication and applicable for the safe performance of work are derived from the speech interference levels described in the reference, Handbook of Noise Measurement.

The primary goal of the hearing conservation program is to reduce and eventually eliminate hearing loss due to occupational exposures.

Malcolm Pirnie's Hearing Conservation Program involves:

- Identification of exposed personnel (task and assignment identification, workplace and personal monitoring).
- Implementation of noise-reducing engineering and administrative controls.
- Audiometric testing (baseline and annual).
- Training.
- Use of hearing protective devices (plugs, ear muffs).

1. REFERENCES

The program was developed using the following references as guides:

29 CFR 1910.95, "Occupational Noise Exposure"

29 CFR 1926.52, "Occupational Exposure to Noise in Construction"

NIOSH "National Institute for Occupational Safety and Health"

ANSI "American National Standards Institute"

American Conference of Governmental Industrial Hygienists, Threshold Limit Values for Physical Agents in the Work Environment. ACGIH, Cincinnati, OH.

Peterson, A., Handbook of Noise Measurement, Chapter 4.18, "Masking-I Can't Hear You When the Water's Running," GenRad, Inc., 9th edition (1980).

2. POLICY

Malcolm Pirnie employees will control their exposures to hazardous noise, to the extent feasible, by minimizing workplace exposure whenever possible. This will be accomplished by the design and implementation of accepted engineering control methods e.g.: altering the noise-producing equipment or changing the environment to reduce noise levels; or by limiting the time of exposure. When effective engineering or administrative control of hazardous noise is not available, or while being instituted, potentially exposed employees will be issued and be required to use appropriate hearing protection devices at no cost.

Selected Malcolm Pirnie employees, who have the potential to have significant noise exposures, will complete a baseline audiometric medical examination and receive medical clearance prior to wearing any hearing protective device. These Malcolm Pirnie employees will complete annual audiometric testing for as long as they continue to have potential significant noise exposures to ensure that the employee has not suffered a significant threshold shift. In addition, each selected employee will receive annual training in the selection, use, limitations, and care of hearing protection equipment.

This document applies to all Malcolm Pirnie employees who may be exposed to excessive noise levels in both construction and non-construction work.

3. RESPONSIBILITIES

3.1. Corporate Health & Safety Manager

The Corporate Health & Safety Manager (CHSM) will develop, administer, and maintain the Malcolm Pirnie Hearing Conservation Program including:

- Reviewing field operations to determine if there is a potential for exposure to hazardous levels of noise.
- Reviewing and evaluating the results of the audiometric tests.
- Providing training to employees who may be or have been exposed to noise that exceeds the applicable standards.
- Selecting the most appropriate type of hearing protectors for employees exposed to noise at levels above 85 dBA (50% dose).
- Fitting and training the employee in the use of hearing protectors

3.2. Project Managers

Project Managers are responsible for:

- Anticipating and identifying areas where Malcolm Pirnie employees may be assigned on their projects that may expose them to potentially hazardous levels of noise.
- Accepting employees' concerns regarding noise levels in the workplace.
- Notifying the CHSM of employees who are suspected or confirmed to be exposed routinely or intermittently at levels equaling or exceeding the 8-hour action level of 85 dBA (50% dose) or the time-weighted average of 90 dBA, regardless of the use of hearing protectors.
- Directing the Project Safety Officer (PSO) to conduct noise surveys to establish the noise levels at a suspected work site; and, directing the PSO to post the appropriate signs in specific areas and operations or on equipment under Malcolm Pirnie's control that may expose employees to noise equaling or exceeding 85 dBA (50% dose).
- Where feasible, directing the PSO to conduct personal dosimetry noise surveys on employees who may be exposed to noise levels that exceed the permissible limits.
- Assisting with the design of feasible engineering controls to reduce employee exposure to noise.
- Notifying project personnel of areas with hazardous noise.
- Notifying the CHSM when there is concern about noise levels.
- Enforcing the use of hearing protectors where required.
-

3.3. Equipment Facility Manager

The Malcolm Pirnie Equipment Facility Manager is responsible for:

- Maintaining or procuring an adequate collection of noise-monitoring equipment, including sound-level meters, octave-band analyzers, personal dosimeters, and calibrators to assess employee exposures.

3.4. Project Staff

Project staff are responsible for:

Contacting the Project Manager or the PSO if noise levels in the workplace are of concern.

- Use hearing protectors where required and adhere to requirements listed on signs identifying noisy areas.
- Participate in required medical exams, required training and demonstrations on how to properly fit protectors offered by Malcolm Pirnie.

4. DEFINITIONS**4.1. Action Level**

The sound level which when reached or exceeded necessitates implementation of activities to reduce the risk of noise-induced hearing loss. OSHA currently uses an 8-hour time weighted average of 85 dBA and a 12-hour time weighted average of 82 dBA as the criterion for implementing an effective hearing conservation.

4.2. Baseline Audiogram

A valid audiogram against which subsequent audiograms are compared to determine if hearing thresholds have changed. The baseline audiogram is preceded by a quiet period so as to obtain the best estimate of the person's hearing at that time.

4.3. dB (Decibel)

The unit used to express the intensity of sound. The decibel was named after Alexander Graham Bell. The decibel scale is a logarithmic scale in which 0 dB approximated the threshold of hearing in the mid frequencies for young adults and in which the threshold discomfort is between 85 and 95 dB and the threshold for pain is between 120 and 140 dB.

4.4. Hazardous Noise

A hazardous noise is any sound for which any combination of frequency, intensity, or duration is capable of causing permanent hearing loss in a specified person.

4.5. Noise Dose

The noise exposure expressed as a percentage of the allowable daily exposure. For OSHA, a 100% dose would equal an 8-hour exposure to a continuous 90-dBA noise; a 50% dose would equal an 8-hour exposure to an 85-dBA noise or a 4-hour exposure to a 90-dBA noise.

4.6. NRR (Noise Reduction Rating)

The NRR is a single-number rating method which attempts to describe hearing protection based on how much the overall noise level is reduced by the hearing protection itself. When estimating A-weighted noise exposures, first subtract 7 dB from the NRR and then subtract the remainder from the A-weighted noise level. The NRR theoretically provides an estimate of the protection that should be met or exceeded by 98% of the wearers of a given device.

4.7. Permissible Exposure Limit

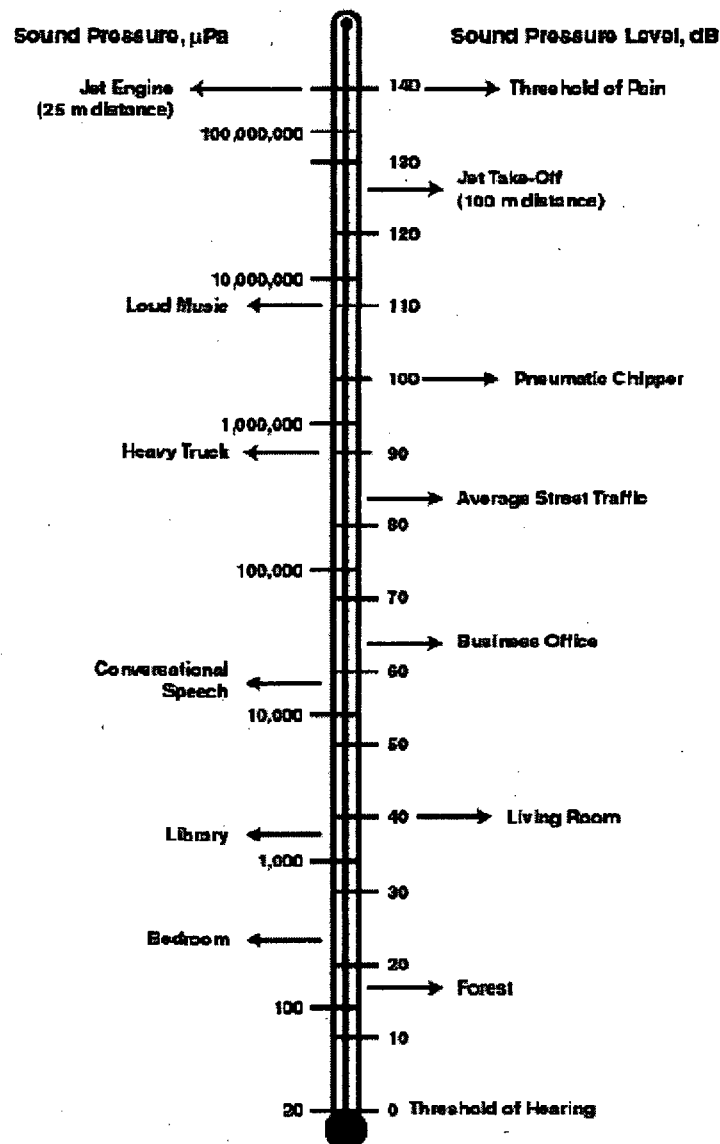
The OSHA Permissible Exposure Limits (PEL) is presently a 90dBA 8-hour time-weighted average exposure that can not be exceeded during any 8-hour work shift of a 40-hour workweek.

5. NOISE HAZARDS

Exposure to excessive levels of noise can result in permanent hearing loss, acuity, development of tinnitus (i.e., ringing of the ears), a possible increase in blood pressure, and stress-related problems. Noise may also cause annoyance or difficulty in communicating or working effectively and safely. A general guideline is that if you need to raise your voice to communicate with a co-worker at a normal conversation distance, then you may be in a noise hazard area.

APPENDIX F. CORPORATE HEARING CONSERVATION PROGRAM

The figure below shows the sound pressure levels on the decibel and log scales for various types of equipment and areas where such noise levels may be encountered.



6. NOISE EVALUATION

The Project Manager will identify work areas on his or her project where noise levels have the potential of equaling or exceeding 85 dBA (50% dose, see Definitions). These areas will be evaluated by the PSO and potentially exposed employees will be identified. Those areas where the noise levels can be shown to be below 85 dBA (50% dose, see Definitions) will not be routinely monitored. Identification of hazardous noise areas and equipment is the responsibility of the Project Manager but may be delegated to the PSO. (Item 2 and Item 3)

Signs will be posted at the entrance to any work area under Malcolm Pirnie control where noise levels exceed 85 dBA, requiring anyone entering the area to wear proper hearing protection. Personnel who work in these areas shall have hearing protection supplied to them, shall be instructed in its proper use, and be required to wear this equipment when in these areas. It is the responsibility of the Project Manager to ensure that these precautions are enforced.

6.1. Noise Measurements and Exposure Assessments

In order to effectively control noise it is necessary that the noise be accurately measured according to standard procedures and that the measurements are properly evaluated against accepted criteria. All noise monitoring will be conducted in accordance with established regulatory standards.

The monitoring of employees for noise exposure is made up of two parts, area and personal monitoring. This monitoring will include an evaluation of the specific noise environment in which hearing protection devices may be used. Area measurements are generally obtained first. If noise levels are at or above 85 dBA, then the PSO, in consultation with the Project Manager and the CHSM may be directed to conduct personal monitoring using dosimeters. All noise exposure monitoring data will be recorded and maintained. (Item 3)

6.2. Area Measurements

In an area survey, measurements of environmental noise levels are recorded using a sound-level meter to identify work areas where employees' exposures may be above hazardous levels. Area monitoring is conducted using a calibrated sound level meter set to the "A" scale, slow response. Within the area of interest, several different locations will be measured. Typical measurement locations would include:

- In the hearing zone at the employee's work location;
- Adjacent to the noise source(s);
- At the entrance(s) to the work area;
- At other locations within the area where the employee might spend time.

A rough sketch of the area will be included with the results showing the locations where the noise readings were obtained. If the noise levels are below 85 dBA in the area, no further routine monitoring will be required for that area. Should any of the noise measurements equal or exceed 85 dBA, records shall be maintained as to the noise levels recorded, where they were taken, and the source(s) of the noise. These records shall be updated regularly to determine if any changes have occurred that would warrant re-monitoring of exposed personnel.

6.3. Personal Monitoring

In some cases an employee's Time-Weighted Average (TWA) noise exposure cannot be determined by the results of area sampling. Determination of the noise exposure level will be accomplished using calibrated noise dosimeters. The PSO will place a noise dosimeter on each employee to be monitored at the beginning of their normal work shift with the microphone placed in the "hearing zone". The dosimeter will be worn for the full duration of the work shift.

At the end of the work shift, the PSO will remove the dosimeter and exposure data downloaded and printed, if capable. Background information will be collected during the testing for each employee detailing job description, unusual job activities, etc., for the time period sampled. Those employees whose noise exposure are equal to or exceed 85 dBA (50% dose) on an 8-hour TWA will be referred for inclusion in the Hearing Conservation Medical Surveillance Program.

APPENDIX F. CORPORATE
HEARING CONSERVATION PROGRAM

6.4. Re-monitoring of Hazardous Noise Areas

Any area with noise levels that equal or exceed 85 dBA shall be re-monitored whenever a change in production process, equipment, or controls increase the noise exposure such that additional employees are exposed to noise levels at or above 85 dBA on a time-weighted average basis. Areas where the noise levels have dropped below 85 dBA shall be eliminated from the monitoring program.

7. NOISE EXPOSURE LIMITS

7.1. Eight-hour, Time-weighted Average (8-Hour TWA) Exposure Limits

The ACGIH has established a standard of 85 dBA (50% dose) (sound pressure in dB related to 20 μ Pa measured on the A-weighted scale) over an 8-hour day. Exposure to transient noise louder than 85 dBA is permitted, as long as the average exposure for the entire day is less than 85 dBA (50% dose).

OSHA's permissible exposure limits for specified exposure durations are summarized below. Table 1 shows the relationship between noise levels and permitted exposure periods.

Table 1. Threshold limit values for noise.^a

	Duration/day	Sound level, dBA ^b
Hours	8	90
	6	92
	4	95
	3	97
	2	100
	1	105
Minutes	30	110
	15	115
	7.50 ^c	120
	3.75 ^c	125
	1.88 ^c	130
	0.94 ^c	135

^a No exposure to continuous, intermittent, or impact noise in excess of a peak C-weighted level of 140 dB.

^b Sound level in decibels are measured on a sound level meter, conforming as a minimum to the requirements of the American Standards Institute Specifications for Sound Level Meters, S1.4 (1983), Type S2A, and set to use the A-weighted network with slow meter response.

^c Limited by the noise source, not by administrative controls.

APPENDIX F. CORPORATE HEARING CONSERVATION PROGRAM

7.2. Ultrasound Exposure Limits

The ACGIH has established standards for exposure to very high audible frequencies and frequencies above the range of human hearing (ultrasonic) (10 kHz to 100 kHz, as measured at the mid-frequency of the third octave band). Table 2 shows the TLV for ultrasound.

Table 2. Threshold limit values for ultrasound.

Mid-frequency octave band (kHz)	One-third octave band level in dB (re 20 mPa)	
	Ceiling Values	8-hour TWA
10	105a	88a
12.5	105a	89a
16	105a	92a
20	105a	94a
25	110	--
31.5	115	--
40	115	--
50	115	--
63	115	--
80	115	--
100	115	--
a Subjective annoyance and discomfort may occur in some individuals at levels between 75 and 105 dB for frequencies ranging from 10 kHz to 20 kHz, especially if they are tonal in nature. Hearing protection or engineering controls may be needed to prevent subjective effects. Tonal sounds in frequencies below 10 kHz might also need to be reduced to 80 dB.		

7.3. Permissible Speech Interference Level

In some cases, noise may not exceed standards established to protect hearing, but may interfere with the safe conduct of work. For example, nuisance noise can prevent effective communication between two or more people working together. It also can prevent employees from hearing or understanding safety instructions or other critical communications.

Most of the information conveyed through speech is in the mid-frequencies, from about 500 to 2000 Hz, which are used to determine how noise will interfere with speech. Noise levels above 60 dB can make telephone conversation difficult.

7.4. Nuisance Noise

Noise may be annoying because of its level, frequency, or aspects of its modulation. A noise may not be very loud, but its frequency may be high enough to cause headaches in susceptible individuals. Alternatively, a noise may not be that loud but may start and stop suddenly. This can disturb concentration or startle exposed personnel. Because there are no guidelines for annoying noise, each case will be examined independently to attempt to alleviate the irritation.

8. ENGINEERING AND ADMINISTRATIVE CONTROLS**8.1. Engineering Controls**

The best way to limit noise exposure is to alter the noise-producing equipment or change the environment to reduce noise levels. Examples include replacing old, noisy equipment; increasing sound dampening around noisy equipment; and improving muffler design. Engineering controls shall be formally considered before other types of controls are implemented. Contact the CHSM for assistance in reviewing the options for engineering controls.

8.2. Administrative Controls**8.2.1. Measuring Noise**

Project Managers who have project that may expose Malcolm Pirnie employees to loud noise will notify the CHSM. The CHSM will consult with the Project Manager and PSO to determine the advisability and the feasibility of conducting noise measurements to identify areas or specific operations that may produce excessive noise or to evaluate a employee's exposure to noise throughout an 8-hour day. The results of the measurements are used to determine which, if any, controls are appropriate to reduce employee exposure to noise.

8.2.2. Modifying Work Schedules

Noise exposure can be limited by altering work schedules. For example, a worker scheduled to work in the area of noisy equipment should perform these tasks over several days so that the average exposure each day does not exceed the permissible limit.

8.2.3. Posting Signs / Labels

Caution labels or signs should be posted on equipment or in areas under Malcolm Pirnie's control where it has been determined that noise levels may exceed 85 dBA. These signs should notify the employee of a potential noise hazard and specify the conditions under which hearing protectors are recommended or required. Caution labels and signs are particularly important where employees' duties require them to move among different locations or to use a variety of tools. The purpose and meaning of the signs shall be included in the training aspect of Malcolm Pirnie's Hearing Conservation Program.



APPENDIX F. CORPORATE HEARING CONSERVATION PROGRAM

9. HEARING PROTECTION DEVICES

Hearing protective devices (e.g., ear plugs, canal caps, and ear muffs) shall only be used after engineering and administrative measures have been implemented, when feasible, and further protection is still needed. They also may be used during the design and fabrication of suitable enclosures, sound damping materials, and isolation.

Whenever employees are subjected to noise exceeding 85 dBA over an 8-hour day, the Project Manager and the CHSM will assist in the design of feasible administrative and engineering controls and will re-evaluate the employee and his/her work area after implementation of the controls. If these controls fail to reduce the noise levels below the established limits, then hearing protection may be used to protect employees.

The CHSM or Project Manager shall provide employees affected by noise with earplugs or earmuffs as needed. The Project Manager may select hearing protectors for employees affected by noise at levels up to 85 dBA but should contact the CHSM to select the appropriate type of hearing protector for areas where exposure above 85 dBA is possible. In all cases, hearing protectors will provide adequate attenuation to prevent exposure to excessive noise levels and will be provided to employees at no cost. The Project Manager or the PSO will conduct surveillance of all work areas where hearing protection devices are used to ensure that they are being used in accordance with manufacturer specifications. (Item 9)

Hearing protectors have a "noise reduction rating" (NRR) number provided by the manufacturer. The NRR is a general guide to the level of noise reduction (in decibels) the protector provides in laboratory test situations if it is fitted and worn properly.

To determine the noise reduction of a hearing protector used in the workplace, subtract 7 dB from the NRR and apply a 50 percent safety factor. For example, hearing protectors with a NRR = 23 dB would provide a noise reduction of 8 dB when used in the workplace $[(23 \text{ dB} - 7 \text{ dB}) \times 0.5 = 8 \text{ dB}]$.

Hearing protectors may also have a "noise reduction rating (subject fit)" or NRR (SF) number, which may be used without any correction. (Item 10)

9.1. Maintenance of Hearing Protective Devices

Reusable earplugs, such as the triple flange or formable devices, should be washed in lukewarm water using hand soap, rinsed in clean water, and dried thoroughly before use. Wet or damp earplugs should not be placed in their respective containers. Cleaning should be performed as needed.

Earmuff cushions should be kept clean. The plastic or foam cushions may be cleaned in the same way as earplugs, but do not allow the inside of the muff to get wet. Allow cushions to completely dry before storing.

9.2. Hearing Protection Performance Information

The maximum sound attenuation one gets when wearing hearing protection devices is limited by human body and bone conduction mechanisms. Even though a particular device may provide outstanding values of noise attenuation the actual noise reductions may be less because the noise surrounding the head and body bypasses the hearing-protective device and is transmitted through tissue and bone pathways to the inner ear.

The term "double hearing protection" is misleading. The attenuation provided from any combination earplug and earmuff is not equal to the sum of their individual attenuation values.

APPENDIX F. CORPORATE HEARING CONSERVATION PROGRAM

10. TRAINING (Item 1)

For each employee who is enrolled in the Hearing Conservation Program, employees will be trained in the use of various hearing protectors at the initial medical surveillance appointment or at the most convenient opportunity thereafter. Project Managers shall provide hearing protectors to all employees in the program and require them to use these devices while noise levels remain excessive.

Employees who are exposed to noise levels equaling or exceeding the 8-hour time-weighted average of 85 dBA (50% dose) will be trained in the use of hearing protective devices. This training covers the following:

- The effects of overexposure to noise on hearing.
- When and/or where hearing protection is required.
- The purpose of hearing protectors.
- The advantages, disadvantages, and attenuation of various types of protectors.
- Instructions on how to select, use, fit, and care for hearing protectors. (Item 9)
- The purpose of audiometric testing, including an explanation of the test procedures.
- Noise Induced Hearing Loss (NIHL)
- Explanation of noise measurement procedures

Additional training and follow-up annual retraining shall be provided based on the results of annual audiometric testing and the work activity involvement.

Training materials shall be updated as necessary when changes occur in hearing protection equipment and work practices. The noise exposure procedures will be posted in the workplace and made available to affected employees.

11. MEDICAL SURVEILLANCE (Item 4)

Medical surveillance examinations are conducted to monitor the hearing acuity of employees exposed to noise levels exceeding 85 dBA, at no cost to the employee. Medical surveillance is not routinely required for employees who are exposed to nuisance noise. Non-Malcolm Pirnie employees/subcontractors should receive medical surveillance through their employer. Equipment and training provided to Malcolm Pirnie employees may be available to some non-Malcolm Pirnie employees.

The CHSM will enroll Malcolm Pirnie employees exposed to noise above the established limits in the Hearing Conservation Program. This program shall meet all the requirements of 29 CFR 1910.95 and include:

- Annual training on the health effects of noise exposure and instructions on how to fit and wear hearing protectors.
- A baseline exam and annual follow-up audiometric testing.

11.1. Baseline Audiograms

A baseline audiogram will be conducted for each exposed employee within 6 months of initial exposure to noise levels at or exceeding 85 dBA. The CHSM will advise the employee of the need to schedule audiometric testing and advise employees to wear hearing protectors or avoid noisy environments for 14 hours prior to the test. (Item 5 and Item 6)

APPENDIX F. CORPORATE HEARING CONSERVATION PROGRAM

11.2. Follow-Up Audiograms

Subsequent annual follow-up audiometric testing will be conducted for each affected employee. The follow-up audiograms will be compared to the employee's baseline audiogram to ensure that the employee has not suffered a significant threshold shift.

When compared to the baseline audiogram, if the follow-up test shows that a worker may have suffered a significant threshold shift, the Occupational Physician may schedule a retest within 30 days and consider the results of this test as the annual audiogram. The Occupational Physician will determine if the threshold shift is occupational or non-occupational and notify the employee in writing within 21 days of the determination. If the threshold shift is occupational, the Occupational Physician will: (Item 7)

Inform the CHSM of the possible need to re-evaluate the employee's work activities. Assess the employee's level of knowledge in the types and use of hearing protection to augment knowledge deficits, that is, if the employee is already using hearing protectors. The CHSM can re-fit the employee with the current hearing protection used or modify the type of hearing protection provided. The CHSM will notify the Project Manager of the situation and provide such hearing protectors to the Project Manager for distribution or directly to the employees for use.

The Occupational Physician may also require the employee to undergo further clinical audiological evaluation or otological examination if it is determined that such an evaluation or examination is necessary, or if they suspect that a medical pathology of the ear is caused or aggravated by the wearing of hearing protectors. (Item 8)

12. RECORDKEEPING

12.1. Exposure Monitoring Records

In accordance with the requirements of 1910.1020(d), Access to Employee Exposure and Medical Records, Malcolm Pirnie shall retain the records for at least the following periods:

- 30 years for noise exposure monitoring records; or
- Duration of employment plus 30 years for medical monitoring records. (Item 11)

12.2. Training Records

Training for the use and maintenance of various hearing protectors should be documented in the site health and safety logbook. The CHSM will maintain a copy of all corporate training records. The training records maintained in the local office file will include the following information:

- The dates of the training sessions.
- The contents or a summary of the training sessions.
- The names and qualifications of persons conducting the training.
- The names and job titles of persons attending the training sessions.

Training records shall be maintained for three years from the date on which the training occurred. Upon request, employees will have access to any of his/her training records maintained by the local office and the CHSM.

All records kept under this Section are subject to OSHA employee record keeping requirements under 29 CFR 1910.1020.

12.3. Availability of Records

In accordance with 29 CFR 1910.1020(e), Access to Employee Exposure and Medical Records, Malcolm Pirnie will provide copies of the requested material to an employee, a former employee, or anyone having appropriate authorization for record access.

12.4. Transfer of Records

Malcolm Pirnie will comply with the requirements for the transfer of records as set forth in 29 CFR 1910.1020 (h).

Appendix G
Material Safety Data Sheets for Decontamination Chemicals

Material Safety Data Sheet



Acetone

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Acetone

OTHER/GENERIC NAMES: Dimethylketone
2-Propanone

PRODUCT USE: Industrial

MANUFACTURER: General Chemical Corporation
90 East Halsey Road
Parsippany, NJ 07054

FOR MORE INFORMATION CALL: 973-515-1840
(Monday-Friday, 9:00am-4:30pm)

IN CASE OF EMERGENCY CALL: 800-631-8050
(24 Hours/Day, 7 Days/Week)

2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>INGREDIENT NAME</u>	<u>CAS NUMBER</u>	<u>WEIGHT %</u>
Acetone	67-64-1	100

Trace impurities and additional material names not listed above may appear in Section 15 of this MSDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

OSHA Hazard Communication Standard: *This product is considered hazardous under the OSHA Hazard Communication Standard.*

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: A colorless liquid with a sweetish, mint-like odor. May cause irritation to skin and eyes. May be harmful if inhaled or swallowed. Flammable.

POTENTIAL HEALTH HAZARDS

SKIN: Liquid can irritate after extensive contact, causing erythema (reddening of skin) or slight dermatitis.

EYES: Vapor may irritate. Liquid may irritate strongly.

INHALATION: Vapor irritates eyes, nose and throat. Greater exposure produces headaches, general intoxication, including incoordination or coma. Gross overexposure may result in respiratory depression and narcotic effect on the central nervous system.

INGESTION: If swallowed, it is likely to cause intoxication similar to that for inhalation.

DELAYED EFFECTS: None known.

Ingredients found on one of the three OSHA designated carcinogen lists are listed below.

<u>INGREDIENT NAME</u>	<u>NTP STATUS</u>	<u>IARC STATUS</u>	<u>OSHA LIST</u>
No ingredients listed in this section.			

MATERIAL SAFETY DATA SHEET

Acetone

4. FIRST AID MEASURES

SKIN: Promptly wash with plenty of soap and water. For extensive area of contact, remove contaminated clothing and shower. Wash clothing before reuse. Get medical attention if irritation persists.

EYES: Immediately flush eyes with plenty of water, continuing for at least 15 minutes. Get medical attention if irritation persists.

INHALATION: Immediately remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen provided a qualified operator is available. Get medical attention.

INGESTION: If conscious, immediately give 2 to 4 glasses of water and induce vomiting by touching back of throat with finger. Get medical attention immediately.

ADVICE TO PHYSICIAN: Treat symptomatically.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT:	-17.8C
FLASH POINT METHOD:	Closed Cup
AUTOIGNITION TEMPERATURE:	465-560C
UPPER FLAME LIMIT (volume % in air):	12.8
LOWER FLAME LIMIT (volume % in air):	2.6
FLAME PROPAGATION RATE (solids):	Not applicable
OSHA FLAMMABILITY CLASS:	Flammable liquid

EXTINGUISHING MEDIA:

Small fire: dry chemical or carbon dioxide. Large fire: water spray or "alcohol" foam. Avoid water in a straight hose stream which will scatter and spread fire, but may be used in large amounts to dilute spills to nonflammable mixtures.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Extremely flammable (0F flash point) with toxic decomposition products upon combustion. 10% acetone solution in water is reported to have an approximate 80F flash point. Flash back may occur along vapor trail. Explosion may result if vapors ignite in confined area.

SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:

Cool containers with water spray if exposed to fire. Wear self-contained, NIOSH-approved breathing apparatus and full protective clothing. After fire, flush area with water to prevent reignition.

MATERIAL SAFETY DATA SHEET

Acetone

6. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE: (See section 8 for recommended personal protective equipment.)

Remove all ignition sources. Provide ventilation. No smoking. Keep people away. Monitor with hose team and backup hose team. Shut off leak if without risk. Wear self-contained, NIOSH-approved breathing apparatus. Flush area with water spray and attempt to keep out of sewer.

Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.

7. HANDLING AND STORAGE

NORMAL HANDLING: (See section 8 for recommended personal protective equipment.)

Keep away from heat, sparks and open flame. Avoid contact with eyes, skin and clothing. Use with adequate ventilation. Avoid spills and limit use in open containers. No smoking in area of use.

STORAGE RECOMMENDATIONS:

Store away from ignition sources in a well-ventilated, noncombustible structure equipped with automatic sprinklers or extinguishing system. Use safety cans for moderate quantities. Keep containers closed. Metal acetone storage containers should be grounded when transferring contents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:

All handling should be done in a closed system (hood), which is customary in the semiconductor industry. Systems should be explosion-proof and capable of maintaining respiratory exposures at less than TLV recommended limit (500 ppm).

PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION: For handling in a closed ventilation system recommended above, use protective gloves and apron of butyl rubber or polyvinyl acetate. For unusual situations where repeated or prolonged skin contact may be anticipated, add full protective clothing to prevent contact with liquid. Remove contaminated clothing promptly; wash and dry before reuse.

EYE PROTECTION: For handling in a closed ventilation system recommended above, wear safety glasses with side shields. Add a full face shield when pouring liquid. For leak, spill or other emergency, use chemical safety goggles. Do not wear contact lenses.

RESPIRATORY PROTECTION: None required if handled in a closed ventilation system recommended above. For leak, spill or other emergency where mist or vapor are evolved, use a NIOSH-approved self-contained breathing apparatus or air-supplied respirator with a full facepiece. For lower concentrations, a gas mask with organic vapor canister may be used.

ADDITIONAL RECOMMENDATIONS: Provide eyewash and safety showers convenient to the workplace.

MATERIAL SAFETY DATA SHEET

Acetone

EXPOSURE GUIDELINES

<u>INGREDIENT NAME</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>	<u>OTHER LIMIT</u>
Acetone	500 ppm TWA 750 ppm STEL	1000 ppm TWA	-----

¹ = Limit established by General Chemical Corporation.

² = Workplace Environmental Exposure Level (AIHA).

³ = Biological Exposure Index (ACGIH).

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:

None.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:

Colorless liquid

PHYSICAL STATE:

Liquid

MOLECULAR WEIGHT:

58.08

CHEMICAL FORMULA:

CH₃COCH₃

ODOR:

Sweetish, mint-like odor

SPECIFIC GRAVITY (water = 1.0):

0.79

SOLUBILITY IN WATER (weight %):

Complete

pH:

Approx. 7 (1 vol. acetone in 1 vol. water)

BOILING POINT:

56.2C

MELTING POINT:

-95C

VAPOR PRESSURE:

180 mmHg @ 20C

VAPOR DENSITY (air = 1.0):

2.1

EVAPORATION RATE:

1.9

COMPARED TO: Ether

% VOLATILES:

100

FLASH POINT:

-17.8C

(Flash point method and additional flammability data are found in Section 5.)

10. STABILITY AND REACTIVITY

NORMALLY STABLE? (CONDITIONS TO AVOID):

Stable under normal conditions. Containers may rupture when exposed to high heat such as a direct flame.

INCOMPATIBILITIES:

Reacts with strong oxidants, including halogens, and some acids.

HAZARDOUS DECOMPOSITION PRODUCTS:

Combustion products are carbon monoxide and carbon dioxide.

HAZARDOUS POLYMERIZATION:

Will not occur.

MATERIAL SAFETY DATA SHEET

Acetone

11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS:

Rabbit-skin: 395 mg / open skin / mild

Rabbit-eye: 20 mg / severe

LD₅₀ (oral, rat): 5800 mg/kg

LC₅₀ (inhl, rat): 50100 mg/m³ / 8 hr

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:

Data not available.

OTHER DATA:

None.

12. ECOLOGICAL INFORMATION

BOD₅ (g/g): 0.31-1.63 Std. Dilution / Sewage Seed

Aquatic Toxicity: 14,250 ppm / 24 hr / sunfish / killed / tap water

13,000 ppm / 48 hr / mosquito fish / TLm / turbid water

13. DISPOSAL CONSIDERATIONS

RCRA

Is the unused product a RCRA hazardous waste if discarded? Yes

If yes, the RCRA ID number is: U002

OTHER DISPOSAL CONSIDERATIONS:

The information offered in section 13 is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

14. TRANSPORT INFORMATION

US DOT HAZARD CLASS: 3, PG II

US DOT ID NUMBER: UN 1090

PROPER SHIPPING NAME: Acetone

For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

MATERIAL SAFETY DATA SHEET

Acetone

15. REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA)

TSCA INVENTORY STATUS: Listed on the TSCA Inventory.

OTHER TSCA ISSUES: TSCA 12(b) Export Notification required.

SARA TITLE III/CERCLA

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients.

<u>INGREDIENT NAME</u>	<u>SARA/CERCLA RQ (lb)</u>	<u>SARA EHS TPQ (lb)</u>
Acetone	5000	-----

Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.

SECTION 311 HAZARD CLASS: Immediate, Fire.

SARA 313 TOXIC CHEMICALS:

The following ingredients are SARA 313 "Toxic Chemicals" and may be subject to annual reporting requirements. CAS numbers and weight percents are found in Section 2.

<u>INGREDIENT NAME</u>	<u>COMMENT</u>
No ingredients listed in this section.	

STATE RIGHT-TO-KNOW

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

<u>INGREDIENT NAME</u>	<u>WEIGHT %</u>	<u>COMMENT</u>
No ingredients listed in this section.		

ADDITIONAL REGULATORY INFORMATION:

DEA Precursor and Essential Chemical [21 CFR 1310.04(f)]

WHMIS CLASSIFICATION (CANADA):

B2, D2B

FOREIGN CHEMICAL CONTROL INVENTORY STATUS:

Listed on EU EINECS and Canadian DSL.

16. OTHER INFORMATION

CURRENT ISSUE DATE: January, 2002

PREVIOUS ISSUE DATE: August, 1996

MATERIAL SAFETY DATA SHEET

Acetone

CHANGES TO MSDS FROM PREVIOUS ISSUE DATE ARE DUE TO THE FOLLOWING:

Change in format.

OTHER INFORMATION: None

ALCONOX MSDS

Section 1 : MANUFACTURER INFORMATION

Product name: Alconox

Supplier: Same as manufacturer.

Manufacturer: Alconox, Inc.
30 Glenn St.
Suite 309
White Plains, NY 10603.

Manufacturer emergency 800-255-3924.

phone number: 813-248-0585 (outside of the United States).

Manufacturer: Alconox, Inc.
30 Glenn St.
Suite 309
White Plains, NY 10603.

Supplier MSDS date: 2005/03/09

D.O.T. Classification: Not regulated.

Section 2 : HAZARDOUS INGREDIENTS

C.A.S.	CONCENTRATION %	Ingredient Name	T.L.V.	LD/50	LC/50
25155-30-0	10-30	SODIUM DODECYLBENZENESULFONATE	NOT AVAILABLE	438 MG/KG RAT ORAL 1330 MG/KG MOUSE ORAL	NOT AVAILABLE
497-19-8	7-13	SODIUM CARBONATE	NOT AVAILABLE	4090 MG/KG RAT ORAL 6600 MG/KG MOUSE ORAL	2300 MG/M3/2H RAT INHALATION 1200 MG/M3/2H MOUSE INHALATION
7722-88-5	10-30	TETRASODIUM PYROPHOSPHATE	5 MG/M3	4000 MG/KG RAT ORAL 2980 MG/KG MOUSE ORAL	NOT AVAILABLE
7758-29-4	10-30	SODIUM PHOSPHATE	NOT AVAILABLE	3120 MG/KG RAT ORAL 3100 MG/KG MOUSE ORAL >4640 MG/KG RABBIT DERMAL	NOT AVAILABLE

Section 2A : ADDITIONAL INGREDIENT INFORMATION**Note:** (supplier).

CAS# 497-19-8: LD50 4020 mg/kg - rat oral.

CAS# 7758-29-4: LD50 3100 mg/kg - rat oral.

Section 3 : PHYSICAL / CHEMICAL CHARACTERISTICS**Physical state:** Solid**Appearance & odor:** Almost odourless.

White granular powder.

Odor threshold (ppm): Not available.**Vapour pressure (mmHg):** Not applicable.**Vapour density (air=1):** Not applicable.**By weight:** Not available.**Evaporation rate (butyl acetate = 1):** Not applicable.**Boiling point (°C):** Not applicable.**Freezing point (°C):** Not applicable.**pH:** (1% aqueous solution).
9.5**Specific gravity @ 20 °C:** (water = 1).
0.85 - 1.10**Solubility in water (%):** 100 - > 10% w/w**Coefficient of water\oil dist.:** Not available.**VOC:** None**Section 4 : FIRE AND EXPLOSION HAZARD DATA****Flammability:** Not flammable.**Conditions of flammability:** Surrounding fire.**Extinguishing media:** Carbon dioxide, dry chemical, foam.
Water
Water fog.**Special procedures:** Self-contained breathing apparatus required.
Firefighters should wear the usual protective gear.**Auto-ignition temperature:** Not available.**Flash point (°C), method:** None**Lower flammability limit (% vol):** Not applicable.**Upper flammability limit (% vol):** Not applicable.

Not available.

Sensitivity to mechanical impact: Not applicable.**Hazardous combustion products:** Oxides of carbon (COx).
Hydrocarbons.**Rate of burning:** Not available.**Explosive power:** None

Section 5 : REACTIVITY DATA

Chemical stability: Stable under normal conditions.

Conditions of instability: None known.

Hazardous polymerization: Will not occur.

Incompatible substances: Strong acids.
Strong oxidizers.

Hazardous decomposition products: See hazardous combustion products.

Section 6 : HEALTH HAZARD DATA

Route of entry: Skin contact, eye contact, inhalation and ingestion.

Effects of Acute Exposure

Eye contact: May cause irritation.

Skin contact: Prolonged contact may cause irritation.

Inhalation: Airborne particles may cause irritation.

Ingestion: May cause vomiting and diarrhea.
May cause abdominal pain.
May cause gastric distress.

Effects of chronic exposure: Contains an ingredient which may be corrosive.

LD50 of product, species & route: > 5000 mg/kg rat oral.

LC50 of product, species & route: Not available for mixture, see the ingredients section.

Exposure limit of material: Not available for mixture, see the ingredients section.

Sensitization to product: Not available.

Carcinogenic effects: Not listed as a carcinogen.

Reproductive effects: Not available.

Teratogenicity: Not available.

Mutagenicity: Not available.

Synergistic materials: Not available.

Medical conditions aggravated by exposure: Not available.

First Aid

Skin contact: Remove contaminated clothing.
Wash thoroughly with soap and water.
Seek medical attention if irritation persists.

Eye contact: Check for and remove contact lenses.
Flush eyes with clear, running water for 15 minutes while holding eyelids open: if irritation persists, consult a physician.

Inhalation: Remove victim to fresh air.
Seek medical attention if symptoms persist.

Ingestion: Dilute with two glasses of water.
Never give anything by mouth to an unconscious person.
Do not induce vomiting, seek immediate medical attention.

Section 7 : PRECAUTIONS FOR SAFE HANDLING AND USE

Leak/Spill: Contain the spill.

Recover uncontaminated material for re-use.
Wear appropriate protective equipment.
Contaminated material should be swept or shoveled into appropriate waste container for disposal.

Waste disposal: In accordance with municipal, provincial and federal regulations.

Handling procedures and equipment: Protect against physical damage.

Avoid breathing dust.
Wash thoroughly after handling.
Keep out of reach of children.
Avoid contact with skin, eyes and clothing.
Launder contaminated clothing prior to reuse.

Storage requirements: Keep containers closed when not in use.
Store away from strong acids or oxidizers.
Store in a cool, dry and well ventilated area.

Section 8 : CONTROL MEASURES

Precautionary Measures

Gloves/Type:



Neoprene or rubber gloves.

Respiratory/Type:



If exposure limit is exceeded, wear a NIOSH approved respirator.

Eye/Type:



Safety glasses with side-shields.

Footwear/Type: Safety shoes per local regulations.

Clothing/Type: As required to prevent skin contact.

Other/Type: Eye wash facility should be in close proximity.
Emergency shower should be in close proximity.

Ventilation requirements: Local exhaust at points of emission.

MSDS Number: M2015 * * * * * Effective Date: 08/10/04 * * * * * Supersedes: 11/12/01

MSDS

Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtree: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-592-2537) for assistance.

METHYL ALCOHOL

1. Product Identification

Synonyms: Wood alcohol; methanol; carbinol

CAS No.: 67-56-1

Molecular Weight: 32.04

Chemical Formula: CH₃OH

Product Codes:

J.T. Baker: 5217, 5370, 5595, 5794, 5811, 5842, 5869, 9049, 9063, 9065, 9066, 9067, 9069, 9070, 9071, 9073, 9075, 9076, 9077, 9091, 9093, 9096, 9097, 9098, 9263, 9822, 9830, V654

Mallinckrodt: 3004, 3006, 3016, 3017, 3018, 3024, 3041, 3701, 4295, 5160, 8814, H080, H488, H603, H985, V079, V571

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Methyl Alcohol	67-56-1	100%	Yes

3. Hazards Identification

Emergency Overview

POISON! DANGER! VAPOR HARMFUL. MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. CANNOT BE MADE NONPOISONOUS. FLAMMABLE LIQUID AND VAPOR. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM AND LIVER.

SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Poison)

Flammability Rating: 3 - Severe (Flammable)

Reactivity Rating: 1 - Slight

Contact Rating: 3 - Severe (Life)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER

Storage Color Code: Red (Flammable)

Potential Health Effects

Inhalation:

A slight irritant to the mucous membranes. Toxic effects exerted upon nervous system, particularly the optic nerve. Once absorbed into the body, it is very slowly eliminated. Symptoms of overexposure may include headache, drowsiness, nausea, vomiting, blurred vision, blindness, coma, and death. A person may get better but then worse again up to 30 hours later.

Ingestion:

Toxic. Symptoms parallel inhalation. Can intoxicate and cause blindness. Usual fatal dose: 100-125 milliliters.

Skin Contact:

Methyl alcohol is a defatting agent and may cause skin to become dry and cracked. Skin absorption can occur; symptoms may parallel inhalation exposure.

Eye Contact:

Irritant. Continued exposure may cause eye lesions.

Chronic Exposure:

Marked impairment of vision has been reported. Repeated or prolonged exposure may cause skin irritation.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders or eye problems or impaired liver or kidney function may be more susceptible to the effects of the substance.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get

medical attention immediately.

Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact:

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:

Flash point: 12C (54F) CC

Autoignition temperature: 464C (867F)

Flammable limits in air % by volume:

lcl: 6.0; ucl: 36

Flammable Liquid and Vapor!

Explosion:

Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Moderate explosion hazard and dangerous fire hazard when exposed to heat, sparks or flames. Sensitive to static discharge.

Fire Extinguishing Media:

Use alcohol foam, dry chemical or carbon dioxide. (Water may be ineffective.)

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Use water spray to blanket fire, cool fire exposed containers, and to flush non-ignited spills or vapors away from fire. Vapors can flow along surfaces to distant ignition source and flash back.

6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! If a leak or spill has not ignited, use water spray to disperse the vapors, to protect personnel attempting to stop leak, and to flush spills away from exposures. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

J. T. Baker SOLUSORB® solvent adsorbent is recommended for spills of this product.

7. Handling and Storage

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product. Do Not attempt to clean empty containers since residue is difficult to remove. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, sparks, flame, static electricity or other sources of ignition: they may explode and cause injury or death.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

For Methyl Alcohol:

- OSHA Permissible Exposure Limit (PEL):

200 ppm (TWA)

- ACGIH Threshold Limit Value (TLV):

200 ppm (TWA), 250 ppm (STEL) skin

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details. Use explosion-proof equipment.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus. Breathing air quality must meet the requirements of the OSHA respiratory protection standard (29CFR1910.134). This substance has poor warning properties.

Skin Protection:

Rubber or neoprene gloves and additional protection including impervious boots, apron, or coveralls, as needed in areas of unusual exposure.

Eye Protection:

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

Clear, colorless liquid.

Odor:

Characteristic odor.

Solubility:

Miscible in water.

Specific Gravity:

0.8

pH:

No information found.

% Volatiles by volume @ 21C (70F):

100

Boiling Point:

64.5C (147F)

Melting Point:

-98C (-144F)

Vapor Density (Air=1):

1.1

Vapor Pressure (mm Hg):

97 @ 20C (68F)

Evaporation Rate (BuAc=1):

5.9

10. Stability and Reactivity**Stability:**

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

May form carbon dioxide, carbon monoxide, and formaldehyde when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Strong oxidizing agents such as nitrates, perchlorates or sulfuric acid. Will attack some forms of plastics, rubber, and coatings. May react with metallic aluminum and generate hydrogen gas.

Conditions to Avoid:

Heat, flames, ignition sources and incompatibles.

11. Toxicological Information

Methyl Alcohol (Methanol) Oral rat LD50: 5628 mg/kg; inhalation rat LC50: 64000 ppm/4H; skin rabbit LD50: 15800 mg/kg; Irritation data-standard Draize test: skin, rabbit: 20mg/24 hr. Moderate; eye, rabbit: 100 mg/24 hr. Moderate. Investigated as a mutagen, reproductive effector.

-----\Cancer Lists\-----

---NTP Carcinogen---

Ingredient	Known	Anticipated	IARC Category
Methyl Alcohol (67-56-1)	No	No	None

12. Ecological Information**Environmental Fate:**

When released into the soil, this material is expected to readily biodegrade. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is expected to quickly evaporate. When released into the water, this material is expected to have a half-life between 1

and 10 days. When released into water, this material is expected to readily biodegrade. When released into the air, this material is expected to exist in the aerosol phase with a short half-life. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into air, this material is expected to have a half-life between 10 and 30 days. When released into the air, this material is expected to be readily removed from the atmosphere by wet deposition.

Environmental Toxicity:

This material is expected to be slightly toxic to aquatic life.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: METHANOL

Hazard Class: 3

UN/NA: UN1230

Packing Group: II

Information reported for product/size: 358LB

International (Water, I.M.O.)

Proper Shipping Name: METHANOL

Hazard Class: 3, 6.1

UN/NA: UN1230

Packing Group: II

Information reported for product/size: 358LB

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----

Ingredient	TSCA	EC	Japan	Australia
------------	------	----	-------	-----------

Methyl Alcohol (67-56-1)	Yes	Yes	Yes	Yes
--------------------------	-----	-----	-----	-----

-----\Chemical Inventory Status - Part 2\-----

--Canada--

Ingredient	Korea	DSL	NDSL	Phil.
------------	-------	-----	------	-------

Methyl Alcohol (67-56-1) Yes Yes No Yes

-----Federal, State & International Regulations - Part 1\-----

-SARA 302- -----SARA 313-----

Ingredient RQ TPQ List Chemical Catg.

Methyl Alcohol (67-56-1) No No Yes No

-----Federal, State & International Regulations - Part 2\-----

-RCRA- -TSCA-

Ingredient CERCLA 261.33 8(d)

Methyl Alcohol (67-56-1) 5000 U154 No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No
Reactivity: No (Pure / Liquid)

Australian Hazchem Code: 2PE

Poison Schedule: S6

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

1.0 16. Other Information

NFPA Ratings: Health: 1 Flammability: 3 Reactivity: 0

Label Hazard Warning:

POISON! DANGER! VAPOR HARMFUL. MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. CANNOT BE MADE NONPOISONOUS. FLAMMABLE LIQUID AND VAPOR. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM AND LIVER.

Label Precautions:

Avoid breathing vapor.
Avoid contact with eyes, skin and clothing.
Wash thoroughly after handling.
Keep container closed.
Use only with adequate ventilation.
Keep away from heat, sparks and flame.

Label First Aid:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. In all cases get medical attention immediately.

Product Use:

Laboratory Reagent.

Revision Information:

No Changes.

Disclaimer:

Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. MALLINCKRODT BAKER, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MALLINCKRODT BAKER, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.

Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

Appendix H
Incident/Near Miss Investigation Report

INTRODUCTION

Malcolm Pirnie, Inc. is committed to providing a workplace that is safe, healthful and free from recognized hazards. A thorough investigation of each incident should be conducted to determine root causes, contributing circumstances, to select corrective actions, and to limit the liability of individual employees and the company.

A comprehensive Incident Investigation provides objective information about the circumstances surrounding a workplace incident.

PROGRAM OBJECTIVE

The Incident Investigation Program is an important management tool to develop accurate worker compensation claim information, to minimize lost work time and medical costs, and to highlight and correct gaps in health and safety programs, training and motivation.

RESPONSIBILITIES

The Incident Reporting Form (Appendix A) is to be completed for each Malcolm Pirnie employee involved in an incident or a near miss (potential incident) or when equipment is damaged in excess of \$500. **The employee's immediate supervisor is responsible for ensuring the completion of the Incident Reporting Form.** See Malcolm Pirnie's Incident/Illness Record keeping Program.

PROGRAM FORMS

The following forms and instructions are designed to assist in the uniform completion of the Incident Investigation.

There are four forms to complete the investigation process:

- Choosing an Incident Investigation Team
- Initial Notification and Data Gathering Worksheet
- The 5 Why's – Root Cause Analysis Job Aid
- Corrective Action and Follow-up Worksheet

Each Form Heading:

Please write in the name of the MPI Region and office the employee was working in at the time of the incident. Write in the project number (if applicable), the employee's supervisor on the project and the date of the incident. Identify the Case Type as Non-Recordable and its type(s) or Recordable and its type(s). Medical Treatment refers to an injury that requires off-site treatment.

CHOOSING AN INCIDENT INVESTIGATION TEAM:

A team should be identified within 30 days of the actual incident and consist of at a minimum, *the injured employee and the injured employee's supervisor.*

INITIAL NOTIFICATION AND DATA GATHERING WORKSHEET

Complete the information required in this section so that a person not present can easily understand the circumstances and environment in which the accident, illness or incident occurred. Use more paper if necessary. Include a sketch or attach photographs if available. Could the results of this incident have had consequences that could be described as major, serious or minor?

We investigate the facts surrounding the actual incident. Testimony should be sought from the victim and any witnesses prior to completing this section. Include the names and phone numbers of any witness to the incident.

THE 5 WHY'S – ROOT CAUSE ANALYSIS JOB AID

This form is helpful in determining the main (root) cause of the incident.

CORRECTIVE ACTION AND FOLLOW-UP WORKSHEET

After the investigator evaluates the potential causes of the incident, what are corrective measures that may have to be implemented to prevent a reoccurrence? Many other possibilities exist and write-in responses are encouraged.

This form is designed to allow all who read this document to learn from the experience and to assist management in developing corrective policies, procedures, facilities, equipment, or training to prevent the same series of circumstances from occurring again.

For further information, contact the Manager, Health and Safety, WHI

APPENDIX A

CHOOSING AN INCIDENT INVESTIGATION TEAM

CHOOSING AN INCIDENT INVESTIGATION TEAM

Remember when choosing an Incident Investigation Team:

1. Size depends on the seriousness or potential seriousness of each incident. Size can vary from a minimum of 2 for a minor incident to a maximum 8-10 for a serious incident.
2. Additional team members should be added based on their perspective or qualifications that will add value to the investigation.
3. Consider departments that may have a significant involvement in any corrective actions that may result from the incident.
4. Our organization's expectations are:

Fill in the blanks below when determining your Incident Investigation Team for an incident.

Incident location:	Date of Incident:
Employee(s) involved:	

	Date	Time	Location
Team Meeting:			

Investigation Team	Name	Phone	Department
Team Leader:			

Comments: _____

MPI Region and office _____ Project Number (if applicable) _____

Employee's Supervisor _____

Case Type: ☐ Recordable ☐ Non-Recordable Medical Treatment ☐ Yes ☐ No

Person filling out this form _____ Date _____

APPENDIX B

INITIAL NOTIFICATION AND DATA GATHERING WORKSHEET

INITIAL NOTIFICATION AND DATA GATHERING WORKSHEET**Initial Notification:**

Internal Notifications Typical: Health & Safety Dept Supervisor, Branch Manager, Project Officer, HR, Legal, etc.	External Notifications Typical: Family, Government Agencies, and local emergency response agencies.

Preliminary Data Gathering:

Typical categories: date, time, and location of incident; condition of work area (clues such as debris, blood, etc.); location of objects that may have contributed to the incident; employees present to see what happened;

Category	Information

Items to note when gathering data and possible questions to ask the involved employee(s) or witnesses:
(Add others or delete those not appropriate for your company.)

1. Where were you when the incident occurred? What were you doing?
2. What did you see? What did you hear?
3. What tools were being used? (Were proper tools being used?)
4. What did the location look like? (Did poor housekeeping or other physical conditions contribute to the incident? Was a recognized or unrecognized hazard present?)
5. Were all switches, dials, controls, and computer software in the correct position?
6. What protective equipment was in use? Was it being used properly?

Comments: _____

MPI Region and office _____ Project Number (if applicable) _____

Employee's Supervisor _____

Case Type: ☐ Recordable ☐ Non-Recordable Medical Treatment ☐ Yes ☐ No

Person filling out this form _____ Date _____

APPENDIX C

THE 5 WHY'S – ROOT CAUSE ANALYSIS JOB AID

THE 5 WHY'S – ROOT CAUSE ANALYSIS JOB AID

Steps in using the 5 Why's Root Cause Analysis Method:

1. Start with the undesired event.
2. Ask: "Why did the incident happen"? This is typically the direct cause.
3. Ask: "Why did that happen"? or "Why did that occur?" This is often a contributing causes.
4. Ask: "Why did that happen"? or "Why did this occur?" There may be other contributing causes.
5. Continue asking "Why?" 5 or 6 times. You should get to the root cause by the answer to the 5th or 6th why question.

Use the form below to help you determine the Root Cause of an incident.

Incident Location:		Date of Incident:
Employee(s) Involved:		
Undesired Event:	Describe briefly what the event was:	
Why did the incident happen? (direct cause) _____		
Why did that happen? (contributing cause) _____		
Why did that occur? (contributing cause) _____		
Why did this happen? (contributing cause) _____		
Why did this occur? (contributing cause) _____		
ROOT CAUSE: _____		

MPI Region and
office _____

Project Number
(if applicable) _____

Employee's Supervisor _____

Case Type ☐ Recordable

☐ Non-Recordable

Medical Treatment

☐ Yes

☐ No

Person filling out this form _____

Date _____

APPENDIX D

CORRECTIVE ACTION AND FOLLOW-UP WORKSHEET

CORRECTIVE ACTION AND FOLLOW-UP WORKSHEET
Team Leader: _____

Incident Location:			Date of Incident:
Employee(s) Involved:			

Causes	Corrective Action	Individual Responsible	Planned Completion Date	Follow-up Date	Comments
Root Cause	Immediate:				
	Long Term:				
Contributing Causes(s)	Immediate:				
	Long Term:				
Direct Cause (if applicable)	Immediate:				
	Long Term:				

Follow-up: Plan to Follow-up on all Corrective Actions within **3 Months** after completion of the investigation to ensure effectiveness.

Communications: List people and places that need to get this information. (Who from the Initial Notification lists needs this information? What other people, departments, groups, offices, etc. can benefit from this information?)

MPI Region and office: _____

Project Number (if applicable) _____

Employee's Supervisor: _____

Case Type: ☐ Recordable ☐ Non-recordable

Medical Treatment? ☐ Yes ☐ No

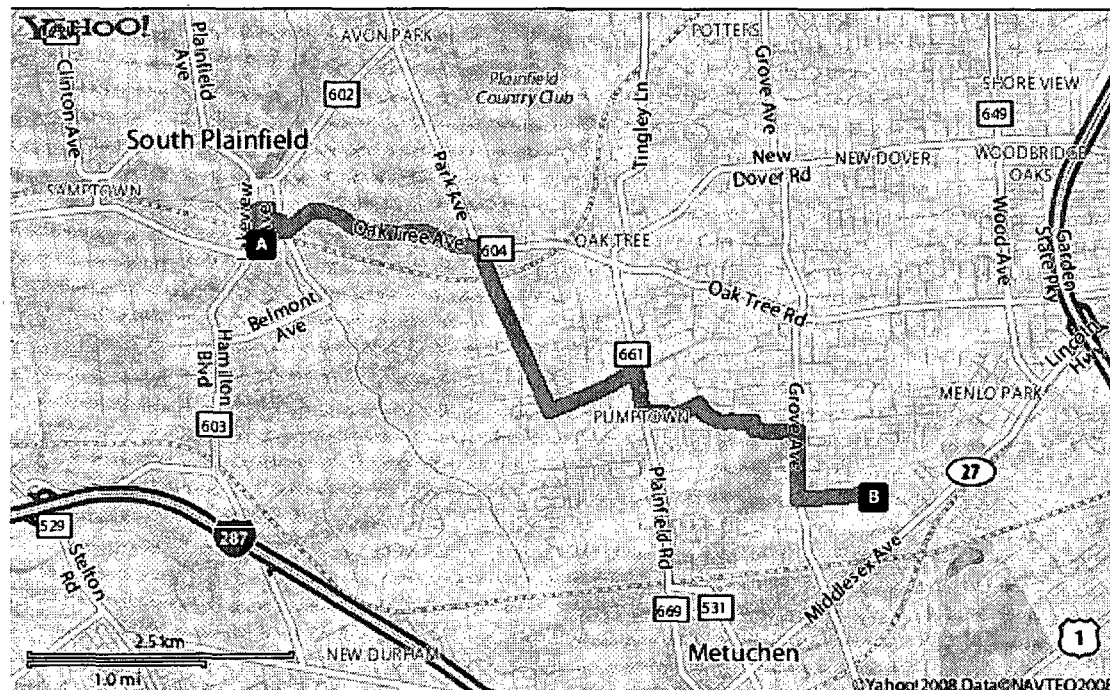
Person filling out this form: _____

Date: _____

Appendix I
Hospital Directions

HOSPITAL DIRECTIONS

Directions to: JFK Medical Center 65 James St, Edison, NJ 08818 (732-321-7000)



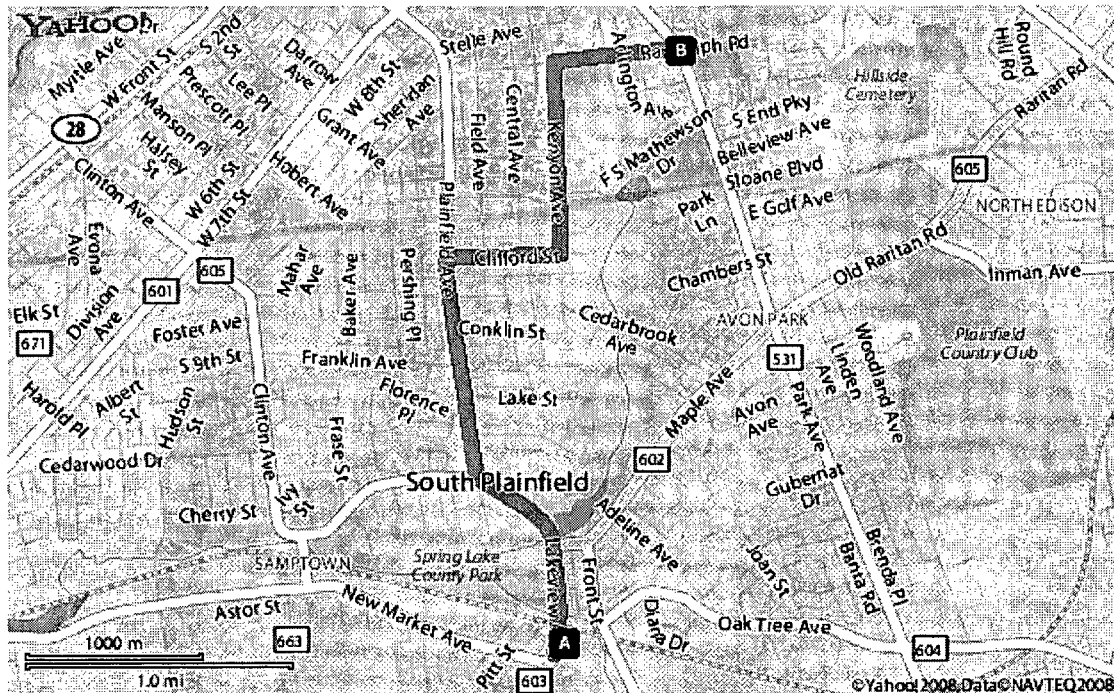
Directions:

1. Start at 333 HAMILTON BLVD, SOUTH PLAINFIELD going toward LAKEVIEW AVE (0.1 mi)
2. Make a Sharp RIGHT Turn on LAKEVIEW AVE (CR-603) (0.2 mi)
3. Turn RIGHT on CHURCH ST (0.1 mi)
4. Turn RIGHT on HAMILTON BLVD (0.1 mi)
5. Turn LEFT on S PLAINFIELD AVE (0.1 mi)
6. Turn RIGHT on FRONT ST (0.1 mi)
7. Turn LEFT on OAK TREE AVE (1.1 mi)
8. Turn RIGHT on PARK AVE (CR-531) (1 mi)
9. Turn LEFT on STEPHENVILLE PKY (0.5 mi)
10. Turn RIGHT on PLAINFIELD RD (CR-661) (0.2 mi)
11. Turn LEFT on SOUTHFIELD RD (0.3 mi)
12. Turn RIGHT on CALVERT AVE W (0.3 mi)
13. Turn RIGHT on CONCORD ST (< 0.1 mi)
14. Turn LEFT on MONROE AVE (0.2 mi)
15. Turn RIGHT on GROVE AVE (0.4 mi)
16. Turn LEFT on JAMES ST (0.4 mi)
17. Arrive at 65 JAMES ST, EDISON, on the RIGHT (< 0.1 mi)

Approximate Distance and Duration: 5.1 miles, 17 minutes

HOSPITAL DIRECTIONS

Directions to: Muhlenberg Medical Center 1200 Randolph Rd, Plainfield, NJ 07060 (908-668-2000)



Directions:

1. Start at **333 HAMILTON BLVD, SOUTH PLAINFIELD** going toward **LAKEVIEW AVE (0.1 mi)**
2. Make a Sharp **RIGHT** Turn on **LAKEVIEW AVE(CR-603)** go **0.4 mi**
3. Continue on **PLAINFIELD AVE (CR-603)** (**1.1 mi**)
4. Turn **RIGHT** on **CLIFFORD ST** (**0.4 mi**)
5. Turn **LEFT** on **KENYON AVE** (**0.7 mi**)
6. Turn **RIGHT** on **RANDOLPH RD** (**0.4 mi**)
7. Arrive at **1200 RANDOLPH RD, PLAINFIELD**, on the **RIGHT** (**< 0.1 mi**)

Approximate Distance and Duration: 3.1 miles, 10 minutes